पाठ्यपुस्तक - समिति के सदस्य

डा० ब्रजेश दत्त आत्रेय
श्री गोपबन्धु गुरु

कुमारी शुक्ला मजूमदार
श्री हरचरण लाल शर्मा

मुख पृष्ठ चित्र : सी० पी० टंडन

पर्यावरण अध्ययन

कक्षा 4 के लिए पाठ्यपुस्तक

भाग II

पर्यावरण से विज्ञान सीखना



राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्

प्रथम संस्करण

मई 1979

वैशाख 1901

पुनर्मुद्रण

मार्च 1980

चैत्र 1902

P.D.5T

मूल्य : रु० 3·25

प्रकाशन विभाग से विनोद कुमार पंडित, सचिव, राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्, श्री अरविंद मार्ग, नई दिल्ली 110016 द्वारा प्रकाशित तथा श्री राजकिशन तुली द्वारा मेहता ऑफसेट वर्क्स, 16-ए, फेज II, नरैना, नई दिल्ली 110028 में मुद्रित.

प्राक्कथन

पर्यावरण अध्ययन पर कक्षा 4 की यह पुस्तक पूर्व निर्मित दो पुस्तकों पर आधारित है, जिनके नाम हैं, 'हमारा देश भारत' और 'पर्यावरण से विज्ञान सीखना'। ये पुस्तकें राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद् द्वारा तैयार किए गए कक्षा III से V तक के पर्यावरण अध्ययन (भाग I और II) की पाठ्यचर्या पर आधारित हैं।

दस-वर्षीय पाठ्यचर्या पर समीक्षा समिति 1977 की रिपोर्ट में दी गई संस्तुतियों के आधार पर प्राथमिक कक्षाओं में 'विज्ञान' और 'सामाजिक अध्ययन' को 'पर्यावरण अध्ययन' के रूप में पढ़ाया जाना है। पर्यावरण अध्ययन की पाठ्यचर्या में प्राकृतिक और सामाजिक दोनों ही परिवेशों को शामिल करना है। पढ़ाने का उद्देश्य बच्चों के मस्तिष्क में तथ्यों और जानकारी मात्र ठूंस भर देना ही नहीं है, वरन् उनकी ज्ञानेन्द्रियों का समुचित विकास कर उनको अपने पर्यावरण का अध्ययन करने एवं अपने अनुभव को अधिक समृद्ध बनाने हेतु, अधिक सक्षम बनाना भी है।

इस पुस्तक के भाग I में यह प्रयास किया गया है कि बच्चे अपने भौगोलिक वातावरण और सांस्कृतिक परम्परा के बारे में जानने को प्रेरित हों। भाग I में किया गया यह प्रयास सफल माना जायेगा यदि हमारे विद्यार्थी यह महसूस करने लगेंगे कि भारत एक देश है और क्षेत्रीय विभिन्नताओं के बावजूद सब भारतीय एक हैं। हम आशा करते हैं कि अध्यापक, बच्चों में राष्ट्रीय दृष्टिकोण विकसित करने में बच्चों की सहायता करेंगे।

इस पुस्तक का भाग II बच्चों के प्राकृतिक वातावरण से सम्बन्धित है। इस भाग की विषय-वस्तु इस दर्शन को प्रतिबिम्बित करती है कि प्राथमिक स्तर पर विज्ञान की शिक्षा का प्रमुख उद्देश्य वैज्ञानिक विधि द्वारा पर्यावरण और तत्सम्बन्धी समस्याओं को समझना होना चाहिए। पुस्तक में दिए गए पाठों के नाम पर्यावरण के उन तत्वों को दर्शाते हैं जिन पर ज्ञानार्जन आधारित है।

आशा की जाती है कि प्राकृतिक पर्यावरण के अध्ययन पर आग्रह में यह परिवर्तन, बच्चों के जीवन की वास्तविक परिस्थितियों से वैज्ञानिक ज्ञान का संबंध स्थापित करने में सहायक होगा। इस भाग में कार्यकलापों द्वारा बच्चों के सक्रिय सहयोग पर अधिक बल है, इन्हें इस प्रकार से चुना गया है कि उनके लिए विशेष उपकरणों की जरूरत नहीं पड़ती, अपितु वातावरण ही स्वयं में सीखने का साधन बन जाता है। विज्ञान के सरल प्रक्रमों जैसे प्रेक्षण, मापन, वर्गीकरण तथा विचारों के आदान-प्रदान को इन कार्यकलापों द्वारा भली-भाँति विकसित किया जा सकता है।

क्योंकि केन्द्रीय विद्यालयों में विद्यार्थी इस कक्षा में विज्ञान अंग्रेजी माध्यम से पढ़ते हैं, और सामाजिक अध्ययन हिन्दी माध्यम से, इसलिए भाग I और भाग II दोनों भाषाओं में अलग-अलग प्रकाशित किए गए हैं।

सामाजिक विज्ञान एवं मानविकी शिक्षा विभाग के अपने सहयोगियों के प्रति मैं आभारी हूं जिन्होंने

प्रो० भा० म० पारख के मार्गदर्शन एवं पर्यवेक्षण में सामूहिक रूप से कार्य करते हुए इस पुस्तक के भाग I के निर्माण में सहायता की है।

परिषद् उन सज्जनों की भी आभारी है जिन्होंने इस पुस्तक के भाग II के लेखन एवं पुनरीक्षण में सहयोग दिया है। लेखन एवं पुनरीक्षण मंडली में डा० ब्रजेश दत्त आत्रेय, श्री गोप बन्धु गुरु, श्री हरचरण लाल शर्मा और कुमारी शुक्ला मजूमदार रहे हैं। पुस्तक को वर्तमान रूप देने तथा प्रकाशित करने में सहायता प्रदान करने के लिए परिषद् डा० ब्रजेश दत्त आत्रेय की आभारी है।

पाठ्यचर्या का विकास एक निरंतर गतिशील प्रक्रिया है, अतः प्रस्तुत पाठ्यचर्या और पाठ्यपुस्तक में सुधार संबंधी सुझावों का सहर्ष स्वागत किया जायेगा। हम ऐसे सब सुझावों का इस पुस्तक के संशोधित संस्करण में उपयोग हेतु विचार करेंगे।

शिव कुमार मित्र

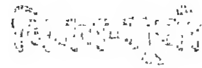
निदेशक

राष्ट्रीय शैक्षिक अनुसंधान

और प्रशिक्षण परिषद्

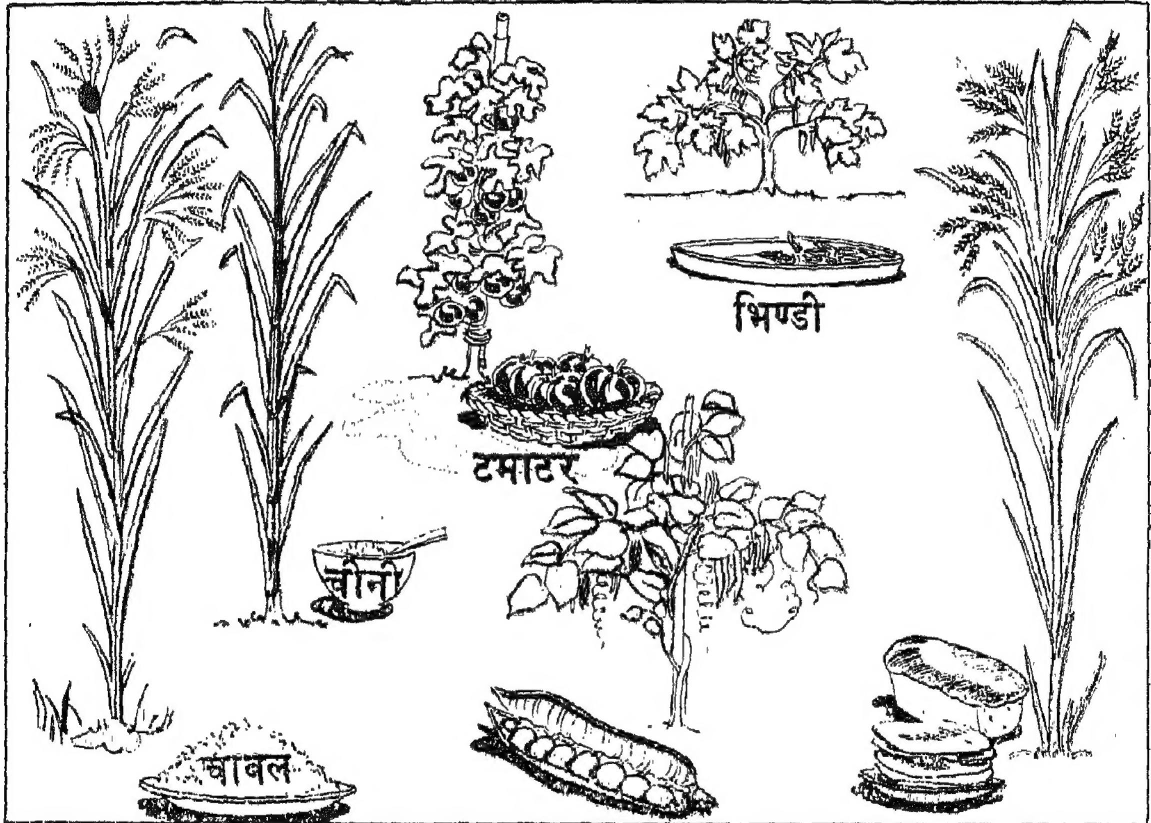
नई दिल्ली

अप्रैल 1979



अध्याय 1

सजीव वस्तुएँ



हमारे चारों ओर बहुत-से पौधे हैं। उन जगहों पर भी जिन्हें हम बंजर कहते हैं, पेड़-पौधे दिखाई देते हैं। क्या तुमने कभी विचार किया है कि यह हमारे लिए कितने महत्त्वपूर्ण हैं। हमारा भोजन, कपड़े और घर बनाने की वस्तुएँ इन पौधों से प्राप्त होती हैं। वे सामान्य पौधे कौन-कौन-से हैं जिनसे हमें भोजन प्राप्त होता है।

आओ इसका पता लगाएँ

रोजाना जो कुछ खाते हो उन वस्तुओं की एक सूची बनाओ। उनमें

से कौन-सी चीजें पौधों से मिलती हैं। यह पता लगाने की कोशिश करो कि ये चीजें किन पौधों से आती हैं। तुम्हें यह पता चलेगा कि चावल, गेहूँ, दाल मक्का, बाजरा ये सब चीजें पौधों से आती हैं। पृष्ठ 1 पर दिए चित्र में कुछ खाने की वस्तुएँ दिखाई गई हैं तथा वे पौधे भी जिनसे ये चीजें हमें प्राप्त होती हैं। चित्र को सावधानीपूर्वक देखो। क्या इनमें से कुछ पौधे घास की तरह दिखाई देते हैं?

आओ इसका पता लगाएँ

बाहर खेतों पर चलो। धान, गेहूँ, मक्का, बाजरा आदि अनाज के पौधों को ध्यान से देखो। इन पौधों में समानता ढूँढो। इन पौधों में क्या-क्या बातें अलग हैं, इसका भी पता करो।



सभी अनाज जैसे, चावल, गेहूँ, बाजरा और मक्का घास जैसे पौधों से मिलते हैं। गन्ना भी इसी तरह का ही पौधा है।

तुमने यह पता कर लिया होगा कि हमारे खाने की बहुत-सी चीजें घास जैसे वंश के पौधों से प्राप्त होती हैं। घरेलू पशुओं के लिए भोजन घास और घास जैसे पौधों से मिलता है। मवेशियों और अन्य पशुओं के लिए भोजन के लिए कौन-कौन-से पौधे काम आते हैं? उनका पता करो।

हम अपना अधिकांश भोजन पौधों से प्राप्त करते हैं। पौधे हमारे लिए और भी कई तरह से लाभदायक हैं, किन-किन तरीकों से हम पौधों और पौधों से प्राप्त वस्तुओं का इस्तेमाल करते हैं।

आओ इसका पता लगाएँ

अपनी कक्षा के आसपास की वस्तुओं की सूची बनाओ। यह पता करो कि ये चीजें किस पदार्थ की बनी हैं। तुम्हें पता चलेगा कि कागज,

पेंसिल, मेज ये सब अधिकांशत: पौधों से प्राप्त चीजों के बने हैं। इनके अलावा और कौन-सी चीजें हैं जो पौधों से मिलती हैं। नीचे लिखी तालिका में कुछ सामान्य वस्तुएँ लिखी हैं, किस पौधे से हमें ये वस्तुएँ प्राप्त होती हैं ? क्या इस सूची में और अधिक वस्तुएँ रखी जा सकती हैं ?

(1) सूती कपड़े
(2) चार्ट
(3) चटाई
(4) घास फूस की बनी छत
(5) लकड़ी का तख्ता

रोजाना काम आने वाले पदार्थों के अलावा हमें पेड़-पौधों से दवाएँ और इत्र मिलता है।



तुम्हारे स्थान के आसपास दवाई वाले पौधे कौन-कौन-से हैं ? पता करो कि इन पौधों से कौन-कौन सी दवाएँ प्राप्त होती हैं । यदि तुम्हारे आसपास किसी अत्तार की दुकान हो तो वहाँ जाओ और जाकर पता करो कि उसकी दुकान की चीजें कौन-से पौधों से मिलती हैं । यदि दवाइयों की दुकान न हो तो पता करो कि कौन इत्र बेचता है । वहाँ जाकर पता करो कि इत्र उसे कहाँ से मिलता है ।

पौधों से हमें भोजन, कपड़े, फर्नीचर, दवाएँ और इत्र आदि मिलता है । इनके अलावा पौधों से हमें कौन-कौन-सी और अन्य वस्तुएँ मिलती हैं ।



पौधों की तरह से ही पशु भी हमारे लिए उपयोगी हैं । इसका पता करो कि किस जीव-जंतु से हमें भोजन, जैसे गोश्त, मछली, अंडे आदि मिलते हैं । कौन-से जीव-जंतु यातायात के काम आते हैं । किन-किन जीव-जंतुओं से हमें चमड़ा प्राप्त होता है । ऊनी और रेशमी कपड़े हमें कहाँ से प्राप्त होते हैं ।



तुम जानते हो कि पौधों के अलग-अलग भाग होते हैं । पौधों के भाग हैं—जड़, तना, पत्ती, फल और फूल । पौधों के हर भाग का अपना-अपना कार्य होता है । जड़ों का क्या काम है ?

आओ इसका पता लगाएँ

मिट्टी में से एक छोटा तथा नया

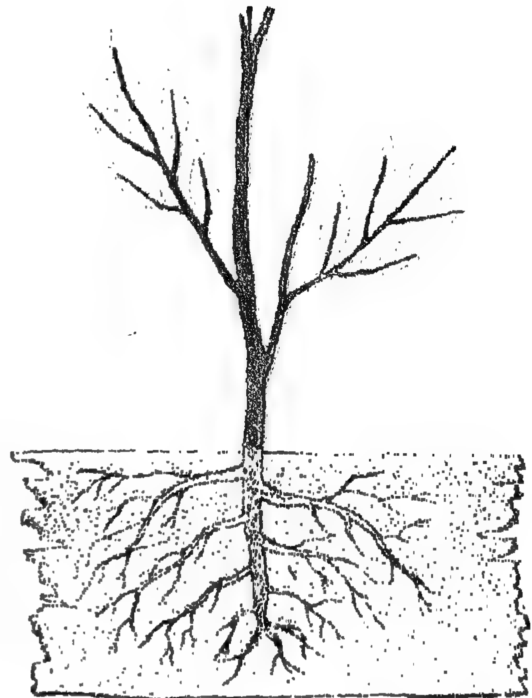
पौधा उखाड़ने की कोशिश करो। क्या तुम उसे आसानी से उखाड़ लेते



हो, यदि नहीं तो क्यों ? सावधानीपूर्वक खोदकर एक पौधा उखाड़ो। ध्यान रखो कि जड़ें टूटने न पाएँ। जड़ों को ध्यानपूर्वक देखो। क्या जड़ों के साथ मिट्टी लगी हुई है ? क्या तुम यह देखते हो कि जड़ें मिट्टी में धँसी होती हैं। इसी की वजह से पौधा मिट्टी में सीधा खड़ा रहता है। इसके अलावा जड़ों का क्या कार्य है ?

आओ इसका पता लगाएँ

गमलों वाले एक ही तरह के दो पौधे लो। उनमें से एक को सावधानीपूर्वक उखाड़कर उसकी जड़ को



काटो। जड़ कटे पौधे को फिर मिट्टी में लगा दो। दोनों पौधों को नियमित रूप से पानी दो। एक दिन अथवा दो दिन बाद दोनों पौधों को ध्यान से देखो। क्या तुम्हें कोई परिवर्तन



दिखाई देता है। परिवर्तनों को लिखो। क्या परिवर्तनों की व्याख्या कर सकते हो। बताओ, बिना जड़ वाला पौधा मुरझा क्यों गया?

जड़ें मिट्टी में से पानी और खनिज पदार्थ सोखती हैं। पानी और खनिज पदार्थ पौधों के अन्य भागों में कैसे पहुँचाता हैं।

आओ इसका पता लगाएँ

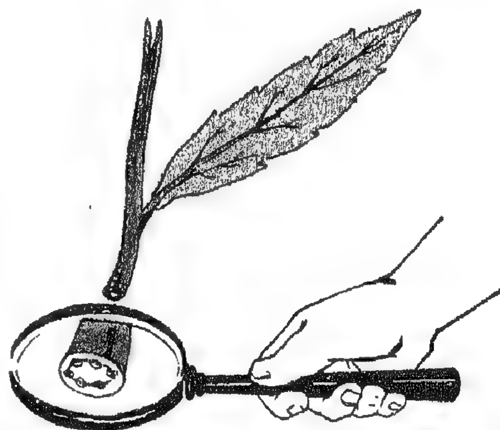
बालसम के दो पौधे लो। दो जार भी लो। एक जार में रंगीन पानी और दूसरे में सादा पानी भरो। एक पौधे को रंगीन पानी में और दूसरे को सादे पानी में रखो। दोनों बर्तनों को कुछ समय के लिए यूँ ही छोड़ दो। कुछ समय बाद इनको देखो।



क्या दोनों पौधे एक-से दिखाई देते हैं। ध्यानपूर्वक देखो, तुम देखोगे कि एक पौधे का तना, पत्ती और जड़ें रंगीन हो गई हैं। पौधे के अंदर रंग किस प्रकार चढ़ गया ?

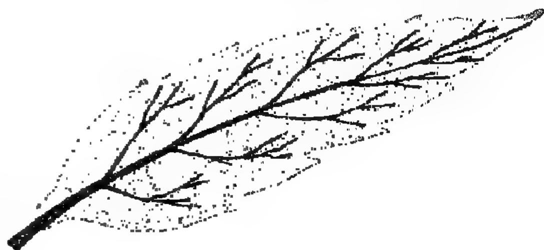
आओ इसका पता लगाएँ

एक तेज चाकू लो। उससे तना काटो। कटे हुए तने की जाँच करो। क्या तुम्हें रंगीन धब्बे दिखाई देते हैं। अब एक आवर्धक लेंस लो। आवर्धक लेंस की सहायता से कटे हुए भाग को



देखो। तुम्हें रंगीन वृत्ताकर क्षेत्र दिखाई देगा। रंगीन पानी तने में से किसके द्वारा पत्तियों में पहुँचता है।

अब पत्तियों को ध्यान से देखो। क्या तुम्हें पत्तियों की नसें दिखाई देती



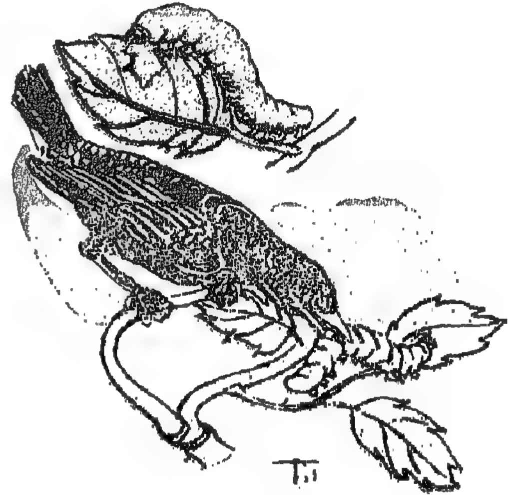
हैं। नसों के द्वारा ही खनिज और पानी पत्तियों में पहुँचता है। यह क्यों महत्त्वपूर्ण है। पत्तियों का क्या काम है ?

आओ इस पर विचार करें

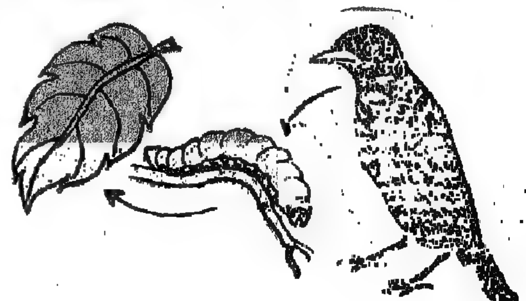
पत्तियाँ पौधों के लिए भोजन बनाती हैं। पत्तियों में हरे रंग का द्रव्य होता है। यह भोजन बनाने के लिए बहुत जरूरी है। हरे पौधे अपना भोजन अपने आप बनाते हैं। वे बचे हुए भोजन को इकट्ठा भी करते हैं। हम पौधे के इस भोजन का उपयोग भी करते हैं। साग-सब्जी, फल और अनाज इसके कुछ उदाहरण हैं।

क्या तुम जानते हो कि यदि हरे पौधे न होते तो हम लोगों को खाने के लिए कुछ भी न मिलता। हरे पौधे साधारण-सी चीजों जैसे पानी और हवा से अपना भोजन बना लेते हैं, लेकिन भोजन बनाने का तरीका बहुत साधारण नहीं है। अगली कक्षाओं में भोजन बनाने की इस रीति का अध्ययन करोगे। सूर्य का प्रकाश, पानी और हवा के कुछ गैसें भोजन बनाने के काम आती हैं। यदि इनमें से कोई एक वस्तु न हो तो हरे पौधे अपना भोजन नहीं बना सकते।

हरे पौधे अपना भोजन स्वयं बनाते हैं। हम तथा पौधे खाने वाले पशु अपना भोजन पौधों से प्राप्त करते हैं। जो जीव-जंतुओं को खाते हैं वे भी



अपना भोजन उन जीव-जंतुओं से प्राप्त करते हैं जो पौधों को खाते हैं। इस प्रकार तुम देखते हो कि हम सब अपने भोजन के लिए हरे पौधों पर निर्भर रहते हैं। चित्र में दिखाया गया है कि ऐसा किस प्रकार एक शृंखला में

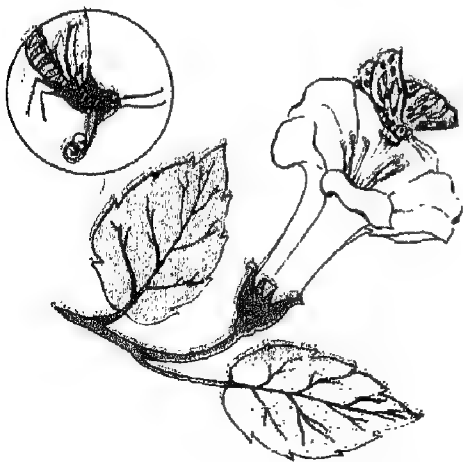


होता है। इसे **भोजन श्रृंखला** कहते हैं।

कुछ पौधों के फल देखने में बहुत सुंदर होते हैं, कुछ की खुशबू बहुत अच्छी होती है। पौधे के लिए फूल किस प्रकार उपयोगी है ?

आओ फूल पर विचार करें

बाग में जाओ और फल-फूल वाले पौधों को देखो। कुछ में तुम्हें बड़े और सुंदर फूल मिलेंगे, कुछ फूलों पर तुम्हें तितलियाँ और मधुमक्खियाँ उड़ती हुई मिलेंगी। ये वहाँ करती क्या हैं ? ये पराग और मकरन्द की खोज में होती हैं। मकरन्द और पराग इनके भोजन हैं। ये पौधों की मित्र

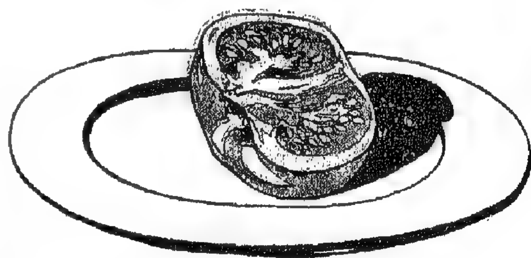


होती हैं। जब ये एक फूल से दूसरे फूल पर जाती हैं तब एक फूल के पराग को दूसरे फूल में दे देती हैं। इस प्रकार ये फूल को उर्वरित करने में सहायता करती है। क्या होता है जब फूल उर्वरित हो जाता है ? तुमने यह देखा होगा कि पहले पौधे पर फूल लगते हैं। कुछ समय के बाद फूल सूखने लगते हैं और फल बनने शुरू हो जाते हैं। तुम्हारे अध्यापक तुम्हें बताएँगे कि फूल से फल किस प्रकार बनता है।

फल मनुष्य के लिए किस प्रकार उपयोगी हैं।

आओ इसका पता लगाएँ

टमाटर, नींबू, आम कोई भी फल लो। फल को काटो। फल के अन्दर



तुम्हें क्या दिखाई देता है ? फल के अन्दर के बीज पौधे के लिए उपयोगी होते हैं, उन्हीं से और नए पौधे उगते हैं। क्या होता है जब कि बहुत-से बीज पौधे के पास गिर जाते हैं।

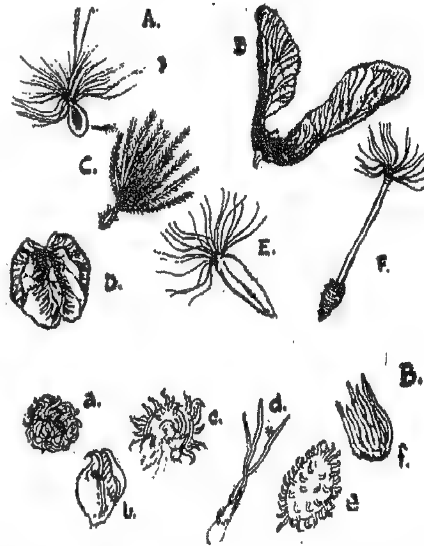
आओ इसका पता लगाएँ

सेम के कुछ बीज लो। दो गमले

लो । इनमें किसी बाग से लाई उपजाऊ मिट्टी भरो । एक गमले में लगभग तीन-तीन सें. मी. की दूरी पर तीन बीज बोओ । दूसरे में बीजों को पास-पास बोओ । नियमित रूप से गमले में पानी दो । बढ़ती हुई पौध को देखो । क्या दोनों गमलों में पौध की वृद्धि अच्छी है । कुछ दिनों बाद फिर देखो । क्यों एक गमले में पौधों की वृद्धि कमजोर दिखाई पड़ती है ? जब पौध पास-पास उगती है, तब उन्हें यथेष्ट मात्रा में पानी और खनिज मिट्टी से नहीं मिलते, पर्याप्त मात्रा में सूर्य का प्रकाश भी नहीं मिलता है । बता सकते हो ये पौधे कमजोर बढ़ोतरी क्यों दिखाते हैं ?

पेड़-पौधों से उनके बीज किस प्रकार दूर-दूर फैल जाते हैं ?

तुमने आक के बीजों को हवा में उड़ते हुए देखा होगा । किसी एक बीज को पकड़ने की कोशिश करो । उसको ध्यानपूर्वक देखो । क्या तुम्हें उनमें बालों जैसी वृद्धि दिखाई पड़ती है । ये पैराशूट जैसा दिखाई देता है । अपने बालों की सहायता से आक के बीज हवा में उड़ते रहते हैं । और बहुत-से पौधों के बीजों पर भी इस प्रकार के बाल होते हैं । ऐसे बीज अपने मातृ पौधों से हवा द्वारा दूर जगहों पर वितरित कर दिए जाते हैं । पेड़-पौधों से उनके बीजों के वितरित होने के और कौन-कौन-से तरीके हैं । चित्र में कुछ पौधों के बीज दिखाए गए हैं ।



क्या तुम इस बात का पता लगा सकते हो कि पेड़-पौधों से यह बीज किस प्रकार दूर चले जाते हैं ।

अपने आसपास से विभिन्न प्रकार के पौधों के फल और बीज इकट्ठे करो । तुम पाओगे कि कुछ फल जैसे कोकिल वर्ण और पोपी के फूलों में काँटे और हुक होते हैं । यह फल पशुओं के बालों में उलझ जाते हैं । इस प्रकार यह एक स्थान से दूसरे स्थान पर चले जाते हैं ।

पता करो कि किस प्रकार अंजीर, अमरूद जैसे पौधों के बीज इधर-उधर वितरित हो जाते हैं।

कुछ बीजों को हवा उड़ा ले जाती है। कुछ बीजों को जीव-जंतु वितरित कर देते हैं। कुछ बीज तथा नारियल जैसे फल पानी द्वारा एक स्थान से दूसरे स्थान को वितरित हो जाते हैं।

आओ कुछ ज्यादा जानकारी हासिल करें

अपने आसपास के पौधों से विभिन्न प्रकार के फलों के बीज इकट्ठे करो। इनकी जाँच-पड़ताल करो। उन तरीकों का पता लगाओ जिनके द्वारा यह अपने पेड़-पौधों से इधर-उधर वितरित हो जाते हैं। प्राप्त नतीजों को निम्नलिखित तालिका के रूप में भरो।

बीजों के प्रकार	किस प्रकार से संबंधित	वितरित होने के तरीके

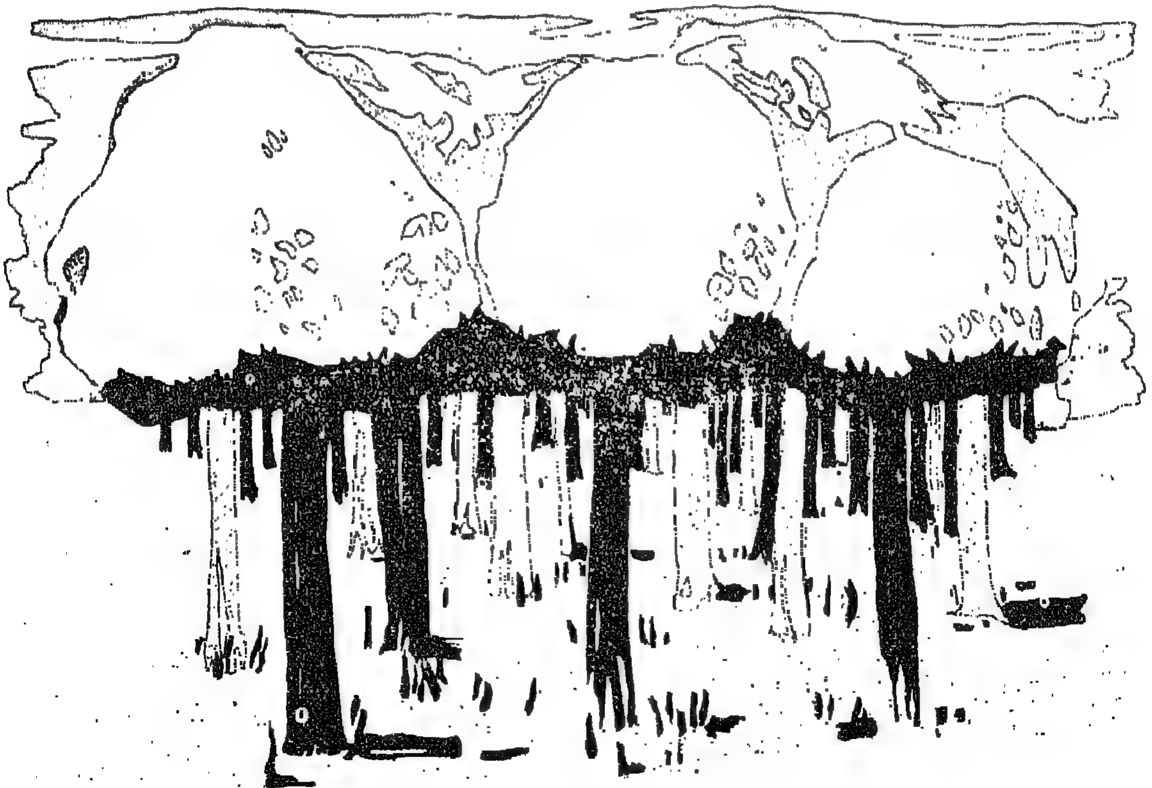
पौधे और पशु हमारे लिए बहुत उपयोगी हैं। उनकी सुरक्षा आवश्यक है। बहुत ज्यादा सर्दी और बहुत ज्यादा गर्मी पौधों के लिए हानिकारक हैं। वृद्धि के लिए इनको सूर्य के प्रकाश और हवा की भी जरूरत होती है। तुमने देखा होगा कि जब बहुत गर्मी होती है, और मौसम बहुत दिनों तक शुष्क रहता है, तब पौधे मर जाते हैं। पहाड़ी इलाकों में जाड़े के दिनों में पौधों से पत्तियाँ गिर जाती हैं। क्या होता है जब पौधों को पर्याप्त मात्रा में प्रकाश और हवा नहीं मिलती।

आओ इसका पता लगाएँ

ऐसे स्थान की खोज करो और चलो जहाँ बड़े पेड़-पौधे बहुत पास-पास उगे हुए हों। उन पौधों को भी देखो जो वृक्षों की छाया में उगे हों। इनमें से अधिकांश की ठीक बढ़ोतरी नहीं होती। क्या तुम जानते हो कि ऐसा क्यों होता है?

आओ इसका पता लगाएँ

एक गमले में कुछ बीज बोओ।



जब पौध उग आए तो किसी अँधेरी जगह पर रखो। कुछ दिनों बाद देखो



क्या होता है। तना किस प्रकार का दिखाई देता है? पत्तियाँ कैसी दिखाई पड़ती हैं?

जैसे पौधों के लिए सूर्य का प्रकाश और हवा जरूरी है, उसी प्रकार पानी भी बहुत जरूरी है। पौधों के लिए पानी किस प्रकार आवश्यक है।

दो एक-से गमलों में लगे पौधे लो। उनमें एक को पानी दो। दूसरे को पानी नहीं दो। कुछ दिनों बाद देखो। क्या दोनों पौधों में समान वृद्धि हुई। कुछ दिनों तक और रखो। कौन-सा पौधा मर जाता है?

पौधे देखभाल चाहते हैं। टहनियों को तोड़ना तथा पौधों को एक स्थान से दूसरे स्थान पर लगाना अथवा उखाड़ना नुकसानदायक है। तुम्हें अपनी जगह के स्थानीय पौधों को सुरक्षित रखने का प्रयास करना चाहिए।

पौधे तथा पशु बीमारियों तथा कीड़े-मकोड़ों से अपनी सुरक्षा चाहते हैं। यह किस प्रकार किया जाता है।

तुमने किसानों को फसलों पर रासायनिक पदार्थ छिड़कते हुए जरूर देखा होगा। रासायनिक पदार्थों का उपयोग करके यह लोग पौधों को बीमारियों से बचाते हैं। कौन-कौन-सी बीमारियाँ फसलों को प्रभावित करती हैं?

किसी किसान के खेत पर चलो। पौधों को देखो। कीड़े-मकोड़ों द्वारा खाए गए पौधे तुम्हें मिलेंगे। कुछ बीमार पौधे भी मिलेंगे। तुम्हारे आसपास के पौधों को कौन-सी बीमारियाँ होती हैं? यह भी पता करो कि इन बीमारियों को रोकने के लिए कौन-कौन-से रासायनिक पदार्थ इस्ते-

माल किए जाते हैं।

पौधों की तरह पशु भी बीमारियों से बचाव चाहते हैं। किसान लोग किस प्रकार अपने पशुओं की देखभाल करते हैं ?

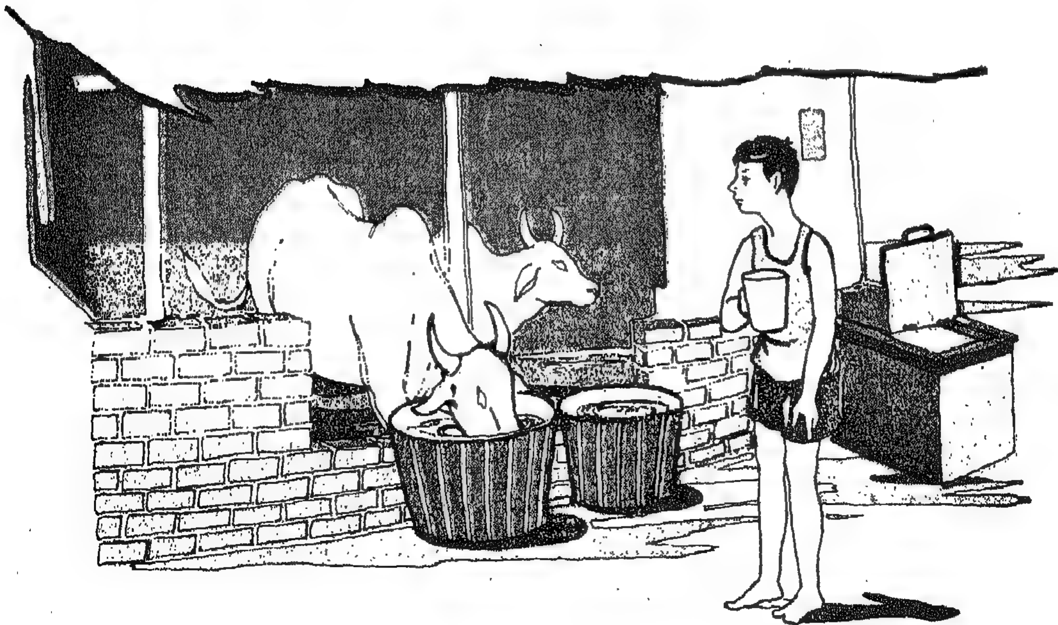
आओ देखकर पता लगाएँ

किसी भी पशु-गृह चलो। देखो पशुओं की देखभाल कैसे की जाती है ? वहाँ के किसान से इस बात पर विचार-विमर्श करो कि इन पशुओं को बीमारियों से कैसे-कैसे बचाया जाता है। इन पशुओं को साफ़ पीने योग्य पानी पिलाने के लिए किस प्रकार प्रबंध करते हैं ?

यदि पानी पीने योग्य न हो तो क्या होगा ?

चित्र में दो गायें दिखाई गई हैं। इनमें से किसकी देखभाल अच्छी की गई है।

पौधे तथा पशु हमारे लिए लाभदायक हैं। इनकी उपयुक्त सुरक्षा तथा देखभाल बहुत जरूरी है। अपने पशुओं तथा पौधों की देखभाल किया करो।



कुछ और भी करो

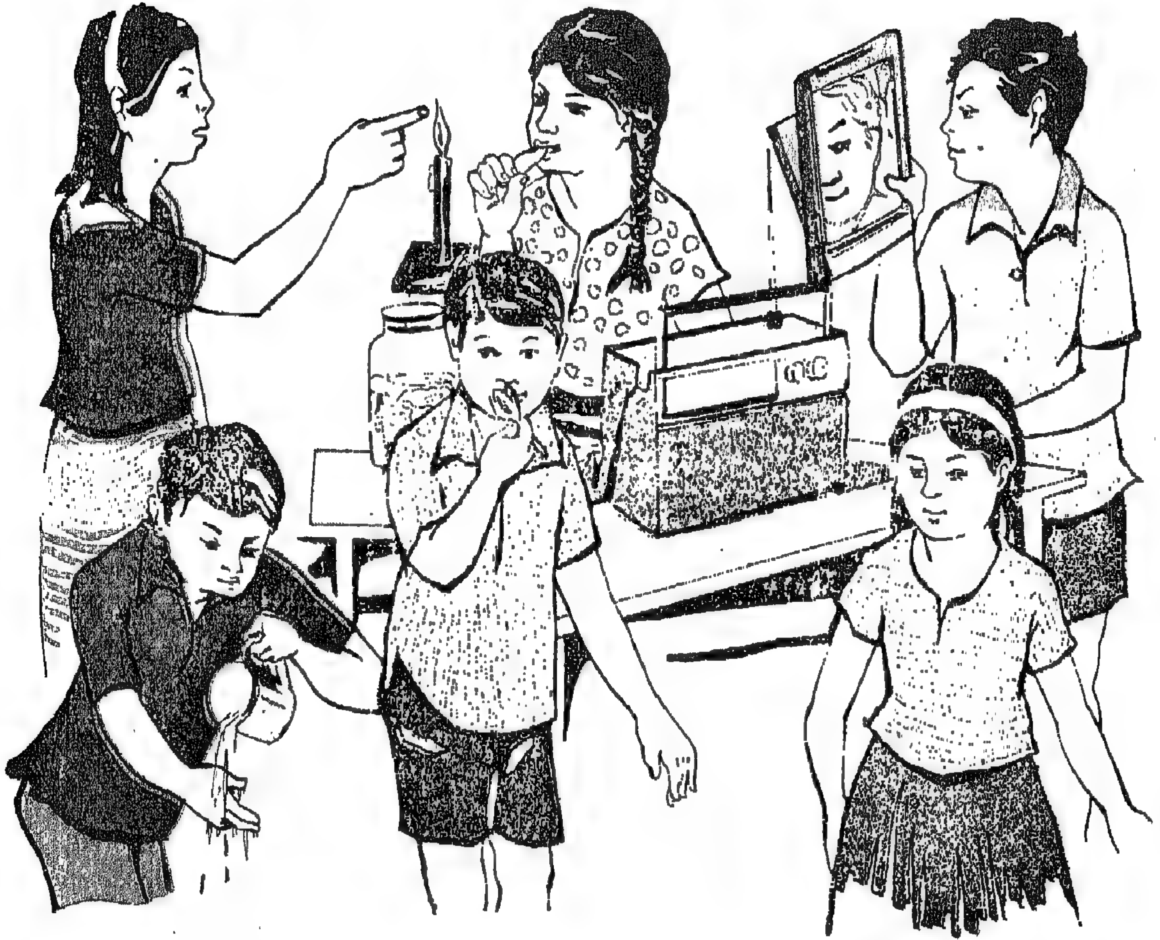
(1) अपने आसपास के लाभदायक पौधों का पता लगाओ और नीचे दी गई तालिका की तरह तालिका बनाकर अपनी कापी में लिखो।

(2) यदि तुम्हारे आसपास कोई पशु चिकित्सालय हो तो पशुओं की सामान्य बीमारियों का पता करो। बीमार पशुओं की चिकित्सा तथा देख-भाल कैसे की जाती है ? यह भी पता करो कि बीमारियों से बचाव कैसे-कैसे हो सकता है ?

पौधे का नाम	पौधे का उपयोग

अध्याय 2

हमारा शरीर, भोजन और स्वास्थ्य



हमारे शरीर के बहुत-से अंग हैं। शरीर का हर हिस्सा अपना-अपना काम करता है। आगे शरीर के कुछ अंगों की सूची दी है, प्रत्येक के आगे उसका क्या कार्य है, लिखो।

शरीर के वे अंग जो हमारे देखने में, सुनने में, सूँघने में, चखने में और महसूस करने में सहायता करते हैं,

अंग	कार्य
आँख	देखने में सहायक
कान	
नाक	
जीभ	
बाल	
पैर	
हाथ	

ज्ञानेन्द्रियाँ कहलाते हैं। ज्ञानेन्द्रियाँ हमारे लिए कितनी महत्वपूर्ण हैं ? इनके बिना क्या हम अपना काम चला सकते हैं ?

आओ इसका पता लगाएँ

अपने किसी साथी की आँखों पर पट्टी बाँधो। उससे कहो कि वह अपने चारों ओर तीन बार घूमे। उसके बाद उससे पूछो कि उसके सामने तुममें से कौन खड़ा है। उसने जो बताया क्या सही निकला, यदि नहीं तो क्यों ?

अब उनके बारे में सोचो जो अंधे हैं। वे किस प्रकार से चलते-फिरते हैं ?



अब अपने कानों में रुई अथवा उँगली लगाओ। क्या तुम सुन सकते

हो ? तुम्हारे अध्यापक जो कुछ पढ़ा रहे हैं क्या अच्छी तरह से सुनाई देता है ? क्या एक बहरा आदमी यह जान सकता है कि गीत क्या होता है, संगीत क्या है ?

अब कल्पना करो कि तुम्हारी जीभ न हो अथवा तुम्हारी जीभ इस प्रकार की हो जाए कि तुम्हें स्वाद का पता ही न चले, तब क्या होगा । क्या तुम चीनी, गुड़, इमली, आँवला, नमक, मिर्च आदि को खाते समय इनके स्वाद के अंतर को बता सकते हो ?

जब कभी बहुत जोर का जुकाम हो जाता है तब प्रायः नाक बंद-सी हो जाती है। उस समय क्या तुम सब चीजों को अच्छी तरह से सूँघ सकते हो? उस समय क्या तुम सुगंध और दुर्गंध में अंतर कर सकते हो ?

यदि स्पर्श करने की ज्ञानेन्द्रिय न हो तब क्या होगा ? क्या तुम गरम और ठंडी वस्तुओं में अंतर कर सकते हो ? क्या तुम यह पता कर सकते हो कि कौन-सी चीज कठोर है और कौन-सी नरम ?

इस प्रकार हमारे आसपास की सारी जानकारी हमारी ज्ञानेन्द्रियों के उपयुक्त रूप में कार्य करने पर निर्भर करती है। इसलिए यह परमावश्यक है कि हम अपनी ज्ञानेन्द्रियों की ठीक देखभाल रखें और उनको साफ़, स्वस्थ रखें। अपनी आँखों को स्वस्थ रखने के लिए हमें रोजाना हरी पत्तियों वाली साग-सब्जी खानी चाहिए। हमारे देश में बहुत-से बच्चे इसलिए अंधे हो जाते हैं क्योंकि वे अपनी आँखों की देखभाल अच्छी तरह से नहीं करते ।

देखने, सुनने, सूँघने, स्वाद और स्पर्श के अलावा और भी बहुत-से कार्य हैं जो शरीर के विभिन्न अंग करते हैं।



आओ इस बात की जानकारी प्राप्त करें कि ये कार्य किस प्रकार होता है।

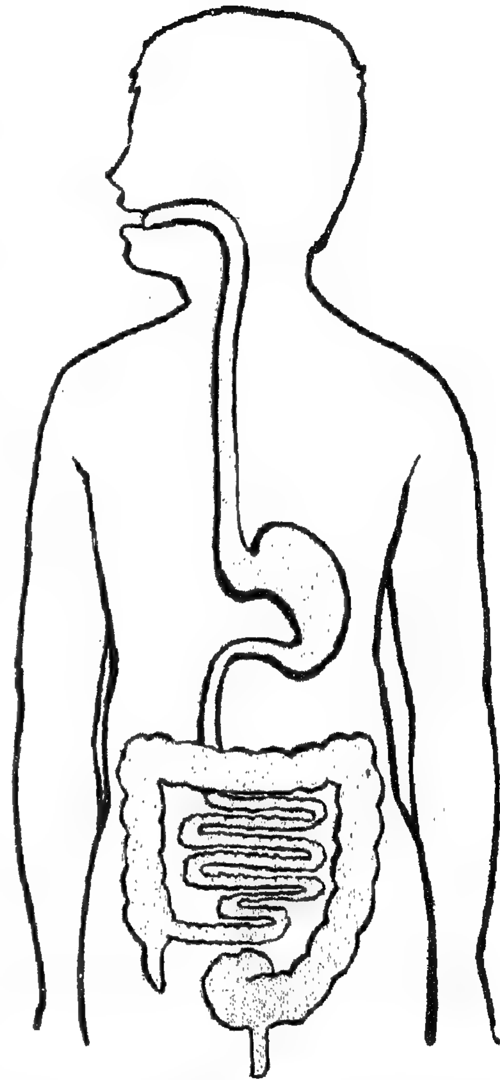
हम खाना खाते हैं, भोजन करते हैं। यह जाता कहाँ है ? इसका क्या होता है ?

आओ इसका पता लगाएँ

एक रोटी, चपाती अथवा चिउड़ा लो। इसे चबाओ। इस भोजन का क्या हो रहा है ? जैसे ही तुम उसको चबाते हो दाँत भोजन को छोटे-छोटे टुकड़ों में विभाजित कर देते हैं और दाँत से यह कण छोटे-छोटे होते जाते हैं। इन कणों में लार मिल जाता है। लार और भोजन के छोटे-छोटे कणों को मिलाकर के जीभ मुँह में एक गोला-सा बना देती है और दाँतों की ओर धकेलती रहती है। इस प्रकार से जीभ और दाँत दोनों मिलकर भोजन को पीसते रहते हैं। क्या कभी ध्यान दिया है कि चबाते-चबाते स्वाद बदल जाता है। क्या भोजन मीठा लगने लगता है ? क्यों ?

आओ इस पर विचार करें

चपाती या चिउड़ा जो भी भोजन किया है, उसमें लार (सलाइवा) मिल जाता है। लार भोजन के स्टार्च को एक सरल प्रकार की शक्कर में बदल



देती है। इसलिए भोजन मीठा लगने लगता है। लार जैसे रस, जो भोजन को सरल रूप में बदल देते हैं, **पाचक रस** कहलाते हैं। भोजन को पीसकर उसको तरल रूप में बदलने की प्रक्रिया को **पाचन** कहते हैं।

चबाने के बाद तुम भोजन को

निगलते हो, निगले हुए भोजन का क्या होता है ?

आओ इस पर विचार करें

चित्र देखो । निगले हुए भोजन का मार्ग देखो । यह मार्ग है : भोजन नली→पेट→आँतें । पेट में भोजन कुछ देर के लिए इकट्ठा होता है । पेट में जो पाचक रस होता है वह इसमें मिल जाता है । यह भोजन फिर आँतों में जाता है । आँतों में भोजन से और कई पाचक रस मिल जाते हैं । यह भोजन द्रव रूप में पचता है । यहाँ का द्रवीय भोजन आँतों की दीवारों में होकर खून में चला जाता है । हमारे भोजन का कुछ भाग बिना पचा रह जाता है, यह जाता कहाँ है ? यह मलाशय में चला जाता है, यहाँ यह एकत्रित होता रहता है । यहीं से यह पाखाने के रूप में फिर बाहर निकल जाता है । तुम्हें शौच आदि की आदत नियमित होनी चाहिए ।

पचा हुआ भोजन जो खून में मिल जाता है, उसका क्या होता है ?

जब तुम्हारे शरीर का कोई अंग कहीं कट जाता है, तब क्या होता है । कटे भाग से खून बहने लगता है, क्यों? क्योंकि खून सारे शरीर में बहता है । अब कल्पना करो कि उस भोजन का क्या होगा जो आँतों की दीवारों से होकर के खून में चला जाता है । क्या यह भी खून के साथ सारे शरीर में नहीं बहेगा ?

खून के प्रवाह को किस प्रकार सारे शरीर में बनाए रखा जाता है ?

अपने कान को अपने मित्र की छाती पर रखो । ध्यानपूर्वक सुनो क्या तुम्हें लपढम-लपढम आवाज सुनाई देती है ? यह तुम्हारे हृदय की धड़कन है । एक मिनट में होने वाली



दिल की धड़कन गिनो। हृदय शरीर के सारे अंगों में खून भेजता है। यह हम किस प्रकार जानते हैं ?

पृष्ठ 19 में जैसा चित्र में दिखाया गया है उस प्रकार अपने मित्र की कलाई पकड़ो। क्या तुम्हें कुछ धड़कता हुआ-सा प्रतीत होता है। यह नाड़ी है। एक मिनट में होने वाली नाड़ी की धड़कन को सुनो। क्या इस धड़कन की दर उतनी ही है जितनी हृदय की धड़कन की दर है। धड़कनों के द्वारा हृदय खून को शरीर के विभिन्न अंगों में भेजता है। हृदय की धड़कन को सुनो। क्या इस धड़कन की वजह से खून का प्रवाह तालमय तरंगों के रूप में प्रवाहित होता है। खून का यह तालमय प्रवाह धड़कन है जो तुम्हें प्रतीत होती है। इस प्रकार यह नाड़ी की धड़कन और हृदय की धड़कन दोनों एक हैं। खून कहाँ जाता है ?

शरीर के विभिन्न अंगो में हृदय खून को धारा के रूप में पंप करता है। उन अंगों से दूसरी धारा के रूप में खून फिर हृदय में आता है। इस प्रकार से खून हमारे शरीर में एक चक्कर के रूप में प्रवाहित होता है। इसको **रक्त-संचार** कहते हैं। उन सब पदार्थों को जो रक्त की धारा में प्रवेश करते हैं, रक्त बहाकर शरीर के सब अंगों में ले जाता है। तुम्हें पता है कि पचा हुआ भोजन आँतों द्वारा खून में पहुँचता है। खून भोजन को हृदय में ले जाता है। हृदय से भोजन शरीर के सब अंगों में पहुँचता है। शरीर के विविध भाग भोजन को रक्त धारा में से अपने काम के लिए ले लेते हैं।

भोजन के पाचन और रक्त-संचार की तरह एक बहुत महत्वपूर्ण कार्य साँस लेना भी है। नाक द्वारा हम साँस लेते हैं। नाक में साँस द्वारा आने वाली हवा का क्या होता है।

अपने मित्र की नाक के अंदर देखो। नथुनों के अंदर क्या तुम्हें बाल दिखाई देते हैं। ये नाक के द्वार में होते हैं। जो हवा नाक में से होकर जाती है उस हवा में से धूल के कणों को यह अलग कर लेती है। (क्या अब बता सकते हो कि तुम्हारी नाक रोज गंदी क्यों हो जाती है ?) जो हवा नाक में से होकर जाती है इस तरह

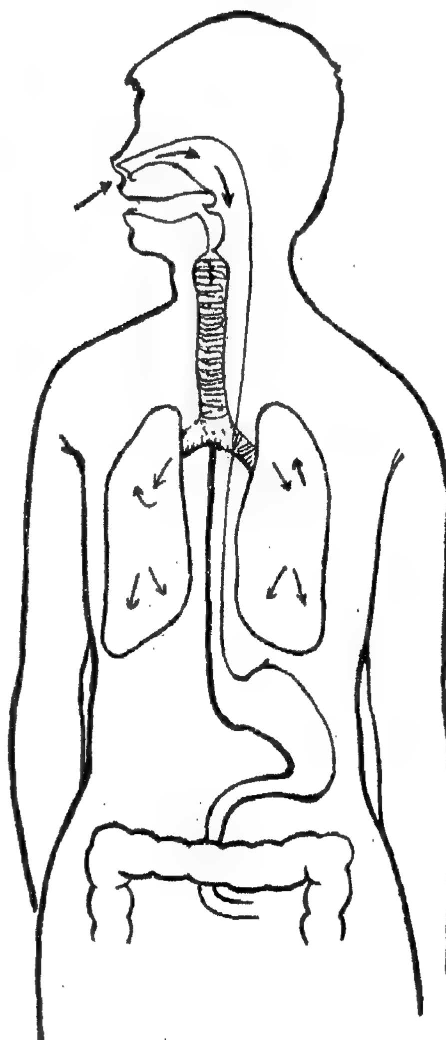
वह गर्म भी हो जाती है। तुम्हें हमेशा नाक से साँस लेना चाहिए और मुँह से कभी भी नहीं।

हवा किस प्रकार अंदर जाती है और बाहर आती है ?

दो-दो की जोड़ी बनाओ। अपने



मित्र की छाती के चारों ओर धागा लगाओ। मित्र से गहरी साँस लेने को कहो। अब धागे को ठीक प्रकार से पकड़ लो। धागे के दोनों किनारों को छाती से सटाकर पकड़े रहो। अब अपने मित्र से कहो कि साँस बाहर निकाले। देखो कि धागे को क्या होता है। क्या वह धागा ढीला हो जाता है या कड़ा। क्या छाती का आकार बदल जाता है। छाती का आकार कब बढ़ता है। अब अपने आपको देखो, जब तुम साँस अंदर की ओर लेते हो तो छाती फूल जाती है और जब साँस बाहर निकालते हो तो तुम्हारी छाती सिकुड़ती है। चित्र



देखो। चित्र में शरीर के अंग तीर द्वारा दिखाए गए हैं। वायु नाक से होकर वायुनली में जाती है और वायुनली से फेफड़ों में। तुम वायुनली की मजबूत दीवार को महसूस कर सकते हो।

फेफड़े में हवा का एक भाग जिसे ऑक्सीजन कहते हैं रक्त की धारा में चला जाता है। रक्त की धारा इस ऑक्सीजन को शरीर के सारे भागों में ले जाती है। शरीर के अंदर ऑक्सीजन चीनी को जलाकर ऊर्जा और अपद्रव्य उत्पन्न करती है। वह अपद्रव्य खून द्वारा इकट्ठा कर लिया जाता है तथा फेफड़े में लाया जाता है। हम जो साँस में हवा बाहर निकालते हैं वह इन अपद्रव्य पदार्थों को बाहर की ओर निकाल देती है। यह हम किस प्रकार जानते हैं ?

आओ इसका पता लगाएँ

अपने सामने एक दर्पण रखो। दर्पण के ऊपर धीरे-धीरे अपनी साँस छोड़ो। तुम क्या देखते हो ? क्या दर्पण के ऊपर धुंध-सी छा जाती है, क्यों ? क्या तुम बता सकते हो कि यह जो धुंध शीशे के ऊपर दिखाई देती है यह और कुछ भी नहीं, केवल पानी की वाष्प है। यह उस हवा का ही एक भाग है जो तुमने साँस में बाहर निकाली है। यह तुम्हारे शरीर का एक अपद्रव्य है। दूसरा अपद्रव्य एक गैस है जिसे **कार्बन डाइआक्साइड** कहते हैं।

शरीर के सब अंग अच्छी तरह से रखने चाहिए ताकि ठीक तरह काम कर सकें। यदि कोई भाग उपयुक्त रूप से कार्य न करे तो यह पूरे शरीर को प्रभावित करता है। ऐसा किस प्रकार होता है ?

आओ इसका पता लगाएँ

पाँच मित्रों को कार्यकलाप में भाग लेने को कहो। प्रत्येक के हृदय की धड़कन, नाड़ी की धड़कन और साँसें गिनो। अब उनको पाँच मिनट के लिए दौड़ाओ। अब फिर उनके हृदय की धड़कन, नाड़ी की धड़कन और साँसें गिनो। अगले पृष्ठ पर दी गई जैसी तालिका बना कर जो-जो तुमने पता लगाया है, अपने प्रेक्षण लिखो।

क्या दोनों बार की हृदय की धड़कन और नाड़ी की धड़कन में तुम्हें कोई अंतर मिलता है ? क्या इसको समझा सकते हो ?

जब तुम दौड़ते हो तब तुम्हें

क्रमांक	नाम	प्रति मिनट दर					
		दौड़ने से पहले			दौड़ने के बाद		
		हृदय की धड़कन	नाड़ी की धड़कन	साँस	हृदय की धड़कन	नाड़ी की धड़कन	साँस
1							
2							
3							
4							
5							

अधिक ऊर्जा की आवश्यकता होती है। अधिक कार्य के लिए हमें अधिक ऊर्जा की आवश्यकता होती है। अधिक ऊर्जा के लिए अधिक शर्करा को जलाने की आवश्यकता होती है। इसके लिए हमें अधिक ऑक्सीजन की आवश्यकता होती है। अधिक ऑक्सीजन के लिए हमें जल्दी-जल्दी साँस लेने की आवश्यकता होती है। हृदय व नाड़ी को भी शरीर के अंगों में अधिक ऑक्सीजन पहुँचाने के लिए धड़कनों की गति बढ़ानी पड़ती है।

पिछले कार्यकलाप में तुमने दौड़ने की क्रिया में भाग लिया। दौड़ते समय तुम्हारी टाँगों को भी कार्य करना पड़ा। तुम्हारे फेफड़ों को साँस तेजी से लेना पड़ा। तुम्हारे हृदय की धड़कनें भी तेज हो गईं। दौड़ने के कार्यकलाप में इन सब अंगों ने मिलकर कार्य किया। इससे यह स्पष्ट हो गया कि हमारा शरीर एक इकाई के रूप में कार्य करता है।

हमारे शरीर को जीने के लिए भोजन की जरूरत होती है। प्रायः हमारे भोजन में पकाई हुई चीजें ज्यादा होती हैं। हम पका हुआ भोजन क्यों

करते हैं ?

कुछ कच्चे चावल चबाओ। क्या तुम इन्हें अच्छी तरह से चबा लेते हो। क्या तुम्हें इनका स्वाद पसंद है। क्या ये पके हुए चावलों की तरह हैं ?



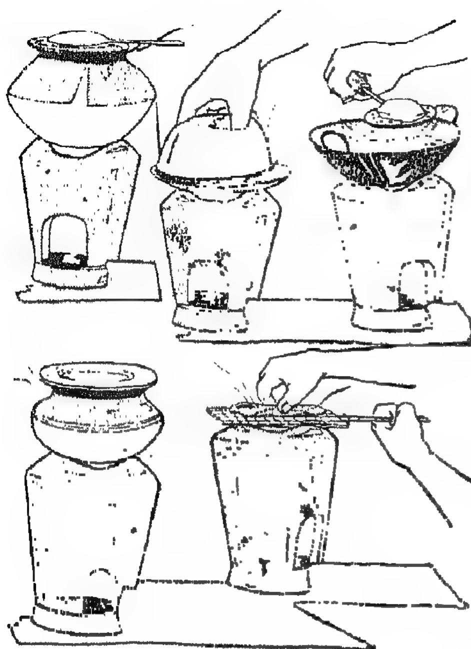
पकाने से चावल स्वादिष्ट हो जाते हैं। पके हुए चावल आसानी से चबाए जा सकते हैं। मुँह के अंदर की लार इनमें आसानी से मिल जाती है और पचा-कर सरल रूप में बदल देती है। यदि तुम अधपका, बिन पका भोजन करो तो तुम्हारे पेट में दर्द हो सकता है। पकाने से खाद्य पदार्थ आसानी से पच जाते हैं। पका कर खाए जाने वाले कुछ पदार्थों के नाम लिखो।

भोजन पकाने के बहुत-से तरीके होते हैं। नीचे की तालिका में कुछ खाद्य पदार्थ दिए हुए हैं और उनको पकाने की विधियाँ भी।

इस सूची में कुछ और चीजों के भी नाम लिखो जो तुम्हारे घर में पकाई जाती हों। उन्हें पकाने की विधियों को भी लिखो।

तुमने यह सीख लिया कि पकाने से खाद्य पदार्थ स्वादिष्ट और शीघ्र

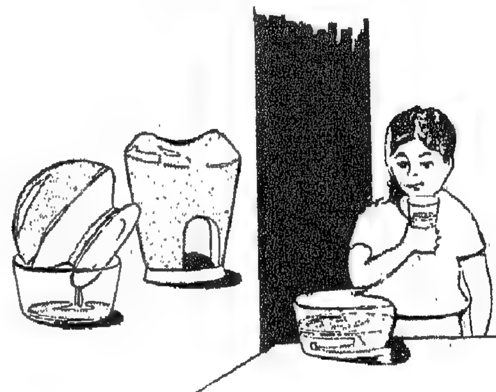
पकाने की विधि	खाद्य पदार्थ
उबालकर	आलू, दाल, चावल
भाप द्वारा सेककर	इडली, चावल, दाल
घी आदि में सेककर	सूखी सब्जियाँ, परांठे
तलकर	पूरी
सेककर	डबल रोटी
सीधा आँच पर सेककर (भूनकर)	चपाती, भुट्टा



पचने योग्य बन जाता है। पकाने से रोगाणु भी नष्ट हो जाते हैं। पकाने की क्रिया से रोगाणुओं से मुक्ति मिल जाती है। लेकिन कभी-कभी खाद्य पदार्थ के वे हिस्से जो तन्दुरुस्ती के लिए जरूरी होते हैं पकाने से या पकाने के गलत तरीकों से नष्ट हो जाते हैं। ऐसा कैसे होता है?

पानी में कुछ चावल उबालो। अतिरिक्त पानी को अलग करो। इसे ठंडा होने दो। इसे चखो। इसका स्वाद क्या साधारण पानी के स्वाद से अलग है? जानते हो ऐसा क्यों? इस द्रव में चावल के खनिज और विटामिन हैं जो बहुत उपयोगी हैं। इन उपयोगी पदार्थों को यदि फेंक दें तो ऐसा करने से भोज्य पदार्थ बर्बाद हो जाता है। इस द्रव पदार्थ का उपयोग दाल तथा रसेदार सब्जी बनाने में करना चाहिए।

जब खाद्य पदार्थों को अधिक पकाया जाता है तब भी इनके विटामिन नष्ट हो जाते हैं। पके हुए भोजन के अलावा तुम सब्जी तथा पत्तेदार



सब्जी भी तो खाते हो। ऐसे पदार्थ जब अधिक पका दिए जाते हैं तब इनके कुछ विटामिन नष्ट हो जाते हैं। पका हुआ भोजन अधिक देर तक नहीं रखना चाहिए। यह खराब हो सकता है। खाद्य सामग्री किस प्रकार खराब हो जाती है?

रोटी का टुकड़ा अथवा उबला हुआ आलू लो। अपनी कक्षा के एक

कोने में किसी अँधेरी जगह में इसे रखो। पानी छिड़ककर इसे गीला करके रखो। तीन-चार दिन के बाद देखो। क्या कोई परिवर्तन दिखाई देता है। क्या टुकड़े पर कुछ काले धब्बे दीखते हैं ? क्या बदबू आती है ? टुकड़े पर क्या फफूँदी उग आई है और उसको खराब कर दिया है।

भोजन सामग्री का खराब होना एक बहुत बर्बादी की बात है। सभी भोजन पदार्थों को खराब होने से बचाना चाहिए। क्या तुम जानते हो कि ठंडी जगहों पर रखे हुए भोजन आसानी से खराब नहीं होते। क्यों ?

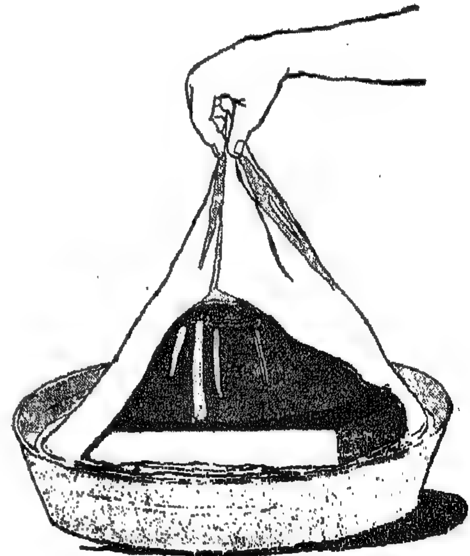
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थोड़ा-सा दूध उबालो। इसे ठंडा करो। इसे दो बर्तनों में डालो। एक बर्तन को यूँ ही छोड़ दो और दूसरे बर्तन को ठंडी जगह पर अथवा किसी कूलर में रखो। 8-10 घंटे के बाद देखो। क्या तुम्हें दोनों बर्तनों में रखे दूध में अंतर मिलता है ? तुम पाओगे कि एक बर्तन का दूध खराब हो गया।

गर्मी और आँधी भरी गर्मियों में भोज्य सामग्री को ठंडा रखना बहुत कठिन है। क्या तुम भोजन सामग्री को खराब होने से बचाने के लिए घर पर सस्ती चीजों से साधारण कूलर बना सकते हो ?

आओ कूलर बनाकर देखें

परात जैसे चौड़े मुँह वाला बर्तन लो। इसमें पानी डालो। बीच में ईंटों या लकड़ी के गुटकों का एक द्वीप जैसा बना लो। द्वीप के ऊपर चौड़े मुँह वाला घड़ा उल्टा करके रखो। इस घड़े की पेंदी पर एक लंबा-सा भीगा कपड़ा रखो। कपड़ा इतना लंबा होना



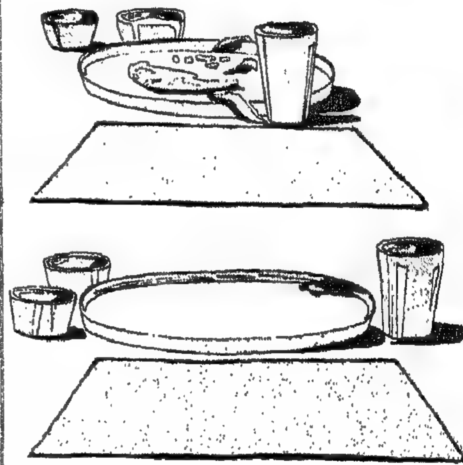
चाहिए कि इसके सिरे बर्तन के पानी में भीगे रहें। यह भोजन सामग्री को ठंडा रखने वाला काम चलाऊ कूलर है। इसे कहीं भी रख सकते हैं। इस कूलर के अंदर कुछ भोजन सामग्री रखें और

उसी भोजन सामग्री के कुछ भाग को बाहर रखो। दो घंटों के बाद दोनों जगह रखी हुई भोजन सामग्री को देखो और तुलना करो। कौन-सी ठंडी है ? कूलर ठंडा क्यों हो जाता है ?

पानी का वाष्पित होना कूलर के अंदर ठंडक पैदा करता है। इस प्रकार से काफी समय तक के लिए भोजन को यथावत् रखा जा सकता है। दूध सात-आठ घंटे तक रखा जा सकता है। पका और तला हुआ भोजन दो-तीन दिन तक रखा जा सकता हैं। इस प्रकार के कूलर में फल और हरी सब्जियों को भी एक हफ्ते तक रखा जा सकता है। इस प्रकार से हम भोजन सामग्री को खराब होने से बचा सकते हैं।

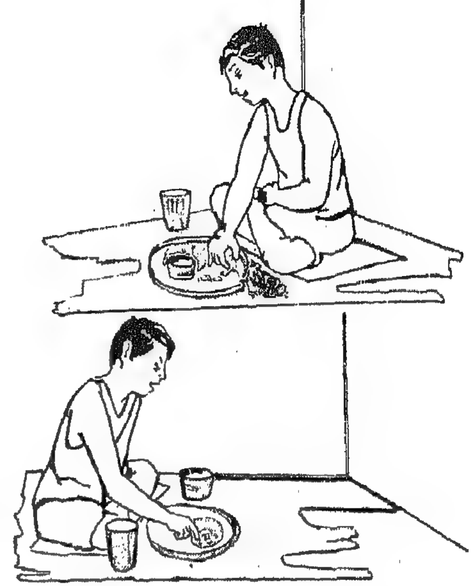
जो बर्तन साफ़ नहीं होते उनमें रोगाणू और धूल लगी होती है। इनमें रखी भोजन सामग्री भी खराब हो जाती है। इसलिए हमें भोजन सामग्री साफ़-सुथरे बर्तनों में रखनी चाहिए। मक्खी और धूल के कण रोगाणुओं और फफूँदी को अपने साथ इधर से उधर ले जाते हैं। इसलिए भोजन सामग्री को धूल और मक्खियों से बचाकर रखना चाहिए। भोजन को साफ़-सुथरे बर्तनों में ढककर रखना चाहिए।

भोजन का खराब होना अन्न की बर्बादी का एक कारण है। जो भोजन हम थाली में जूठा छोड़ देते हैं वह भी एक प्रकार से भोजन की बर्बादी है। जो चीज तुम्हें जितनी खानी हो वह उतनी ही लो। थाली में जूठा भोजन मत छोड़ो। दूसरे प्रकार की भोजन



की बर्बादी वह है जो हम खाते समय या परोसते समय भोजन सामग्री को इधर-उधर छिटका देते हैं। भोजन के छिटकाव से वातावरण भी गंदा हो जाता है। ऐसे छिटके हुए भोजन पर मक्खियाँ आती हैं। भोजन को अच्छी तरह परोसना और खाना चाहिए ताकि उसकी बरबादी न हो।





यदि भोज्य सामग्री को भली प्रकार सुरक्षित न रखा जाए तो वह अक्सर बर्बाद हो जाती है। कुछ फल और सब्जियाँ अधिक दिनों तक नहीं रखे जा सकते। प्रायः यह दो-तीन दिन में खराब हो जाते हैं। यदि कूलर उपलब्ध है तो इनको एक हफ्ते तक रखा जा सकता है, परंतु और अधिक दिनों तक नहीं रखा जा सकता। तुम्हारे घर में कौन-कौन-सी भोजन सामग्री सुरक्षित रखी जाती है। इसको किस प्रकार सुरक्षित रखते हैं। क्या तुम्हारे स्कूल में दोपहर को कुछ खाने का कार्यक्रम चलता है। यदि ऐसा है तो स्कूल में भोजन किस प्रकार सुरक्षित रखा जाता है। पृष्ठ 29 पर दी हुई तालिका के समान एक तालिका बनाकर उसमें लिखो।

भोजन सामग्री को भली प्रकार सुरक्षित रखना चाहिए तथा चूहों आदि से बचाना चाहिए। क्या तुम जानते हो कि चूहे हर साल 10 प्रतिशत भोजन सामग्री को बर्बाद कर देते हैं। तुम्हारे आसपास चूहों की रोकथाम कैसे की जाती है? क्या तुमने कोई चूहेदानी देखी है? चूहेदानियाँ कितने प्रकार की होती हैं? क्या तुमने चूहेदानी में कोई चूहा देखा है? यह किस प्रकार पकड़ा गया। अपने अध्यापक और माँ-बाप से इन प्रश्नों पर चर्चा

क्र. सं.	भोजन	भोजन को सुरक्षित रखने का ढंग
1		
2		
3		
4		
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करो। भोजन, अनाज आदि को सुरक्षित रखना चाहिए ताकि यह खराब न हो। दूषित भोजन नहीं खाना चाहिए। यह स्वास्थ्य के लिए हानिकारक होता है। खराब भोजन ही नहीं, बुरी आदतें भी स्वास्थ्य के लिए हानिकारक हैं। क्या कुछ बुरी आदतें बता सकते हो जो तन्दुरुस्ती के लिए नुकसानदायक हैं? इनमें से कुछ हैं—बीड़ी-सिगरेट पीना, तंबाकू चबाना, शराब आदि नशीली वस्तुओं का सेवन, चाय या काफ़ी अधिक मात्रा में लेना। उन आदमियों को देखो जो इन वस्तुओं का सेवन करते हैं। ऐसी आदतों से उनकी तंदुरुस्ती को नुकसान होता है। अगले पृष्ठ पर बनी जैसी तालिका बनाकर प्रेक्षण लिखो। तालिका से यदि कुछ अतिरिक्त जानकारी भी मिले तो उसे भी लिखो।

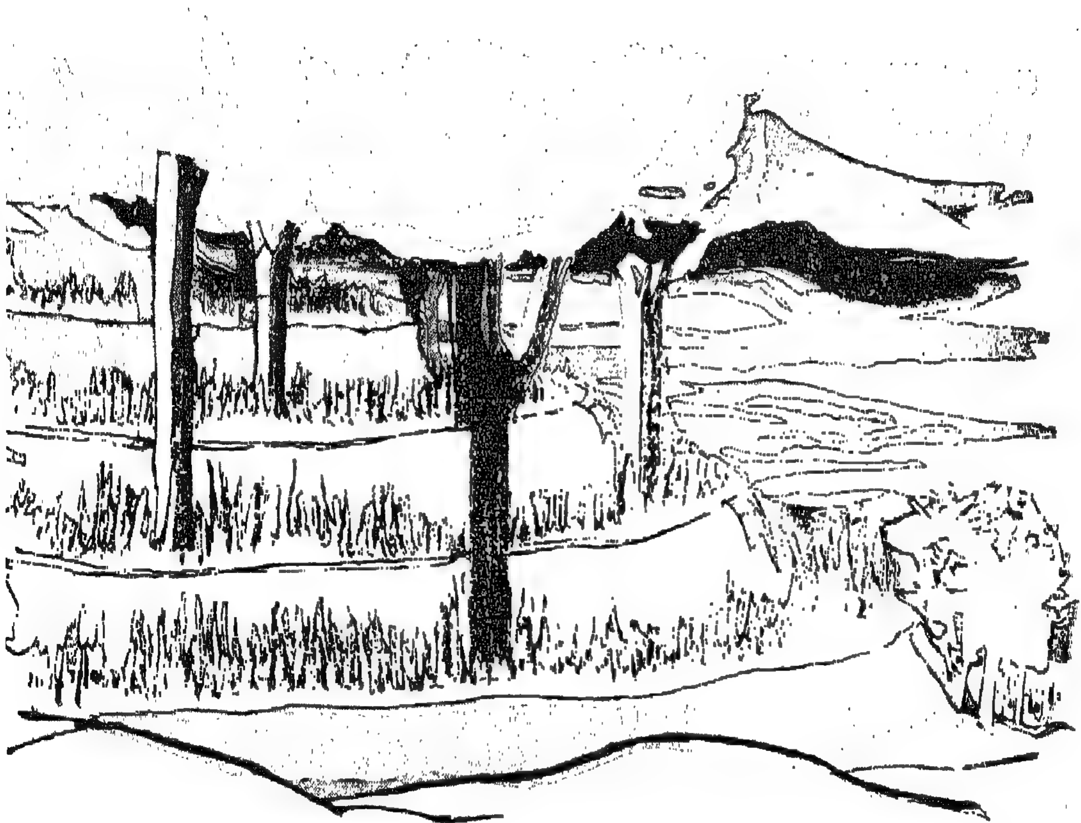
क्या कभी तुमने अधिक मात्रा में चाय या काफ़ी ली है। क्या अनुभव रहा। क्या तुम्हें नींद ठीक तरह से आई? क्या भूख भी अच्छी तरह लगी।

बुरी आदतें किसी में भी नहीं होनी चाहिए। स्वस्थ रहने के लिए अच्छी आदतें सीखो। बुरी आदतों से हमेशा दूर रहो।

बुरी आदतें	बुरी आदतों के परिणाम
बीड़ी-सिगरेट पीना	इनसे फेफड़े बुरी तरह प्रभावित होते हैं। फेफड़े उत्तेजित भी होते हैं और कैंसर रोग हो सकता है।
तंबाकू चबाना	दाँत तो खराब होते ही हैं कैंसर भी हो सकता है।
शराब आदि नशीली वस्तुओं का सेवन	सामान्य ज्ञान में कमी होती है और पैसे की बर्बादी तथा स्वास्थ्य का खराब होना अलग।
चाय और काफ़ी की अधिकता	भूख कम होती है। नींद भी नहीं आती है।

अध्याय 3

मिट्टी का अपरदन और इसकी रोकथाम कैसे करें



मिट्टी कई प्रकार की होती है। मिट्टी की कई किस्में होती हैं। यह चिकनी, बालू और दोमट मिट्टी हो सकती है। यह मिट्टी चट्टानों से किस प्रकार प्राप्त होती है ? चट्टानों से अलग-अलग तरह की मिट्टी कैसे बनती है ?

आओ प्रेक्षण करें

मोटे काँच जैसे गिलास या बोतल का एक टुकड़ा लो। उसे ऊपर से गर्म करो। क्या इसमें दरार आ जाती है ? क्या इसमें से कोई आवाज पैदा

होती है ?

इसके ऊपर पानी डालो। क्या देखते हो ? क्या काँच के टुकड़े में दरार बढ़ गई। किस वजह से काँच के टुकड़े में दरार और बढ़ी ?

इसी प्रकार कुछ चट्टानें दिन में सूर्य की गर्मी से गर्म हो जाती हैं, रात को यह ठंडी हो जाती हैं। जब कभी इन पर वर्षा का पानी पड़ता है, तब ये यकायक ठंडी हो जाती हैं। यदि वर्षा का पानी न भी पड़े तब भी चटटानें रात को कुछ ठंडी हो ही जाती हैं।

चट्टानों का कई प्रकार के मौसमों से पाला पड़ता है। ये गर्म होकर फैल जाती हैं और ठंडी होकर सिकुड़ जाती हैं। इनके ऊपर पानी भी पड़ता है। पानी इनकी दरारों में समा जाता है। यदि बहुत ज्यादा ठंड हो जाए तब यह पानी जम जाता है। जमने पर पानी फैलता है। इस प्रकार चट्टानों में परिवर्तन का क्रम कुछ वर्षों तक चलता रहता है। धीरे-धीरे चट्टानें झड़नी (क्रमबिल) शुरू हो जाती हैं। चट्टानों के ऊपर उँगली लगाने से चट्टानों से लोन जैसी कुछ चीज तुम्हारी उँगली को लग जाती है ऐसी



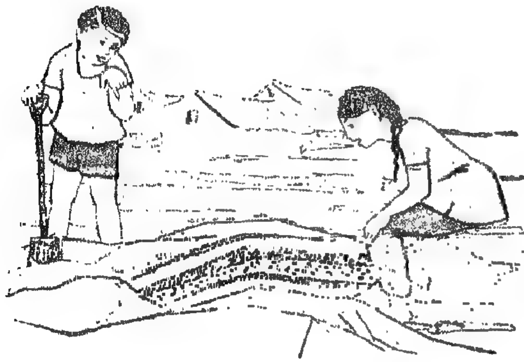
चट्टान को कहते हैं अपक्षीण हो गई है। अपक्षीण चट्टानों पर जब वर्षा पड़ती है तब क्या होता है ?

अच्छा बताओ कि अपर्दित चट्टान की सतह पर जब वर्षा की बूँदें पड़ेंगी तब क्या होगा।

टूटी-फूटी चट्टानों को बहता हुआ पानी अपने साथ बहा ले जाता है। इन चट्टानों का चूरा दूसरे किसी स्थान पर जमा हो जाता है। टूटी-फूटी चट्टानों और मिट्टी को एक स्थान से दूसरे स्थान पर ले जाने का पानी एक महत्त्वपूर्ण वाहक है। मिट्टी हर जगह की अलग-अलग होती है। एक स्थान से दूसरे स्थान की मिट्टी में प्रायः अंतर होता है। परंतु क्या खोदने पर मिट्टी में कुछ फर्क आता है। यदि हम गहराई में किसी एक

जगह पर खोदते चले जाएँ तो क्या होता है ?

एक फावड़ा लो। स्कूल के मैदान में या किसी आसपास के खेत में चलो। आधे मीटर लंबाई और चौड़ाई वाला एक गड्ढा खोदो। क्या तुम्हें गड्ढे की दीवार पर अलग तरह की मिट्टी की सतह दिखाई देती है। ऊपरी परत की



मिट्टी का रंग कुछ गहरा हो सकता है। यदि यह मिट्टी गहरे रंग की हो तब फसल के लिए अच्छी होती है। इसे हम ऊपरी परत वाली मिट्टी (टॉप सॉयल) कहते हैं। नीचे की परतों में जो मिट्टी होती है वह रंग में कुछ हल्की होती है। यह मिट्टी कुछ सख्त होती है और मुश्किल से खुदती है। इस मिट्टी को नीचे परत-वाली (**सब सॉयल**) कहते हैं।

मिट्टी की देखभाल करनी बहुत जरूरी है। हमारी लापरवाही से मिट्टी को हवा, बहता पानी और भारी वर्षा एक स्थान से दूसरे स्थान पर ले जाएँगे। मिट्टी के इस प्रकार दूसरी जगह ले जाने को अपरदन कहते हैं। अपरदन किस प्रकार होता है ?

किसी बाग अथवा मैदान में चलो। वहाँ की मिट्टी लेकर पहाड़ी और नीचे की घाटी जैसा आयोजन करो। जो तुमने वहाँ पर पहाड़ियाँ, घाटियाँ बनाई हैं, उन पर पानी डालो। कल्पना करो कि जो पानी तुम



डाल रहे हो, वह वर्षा का है। ध्यान से देखो, तुम्हारे द्वारा बनाई गई पहाड़ियों का क्या होता है।

यह बहता हुआ पानी तुम्हारे द्वारा बनाई गई पहाड़ियों की ऊपरी

मिट्टी को अपने साथ बहा ले जाता है। ऊपर से यह पानी नीचे घाटी की ओर आता है। यह यहाँ इकट्ठा हो जाता है। जब बहुत वर्षा होती है तब नदियों में बाढ़ आ जाती है। यह बहता हुआ पानी मिट्टी की ऊपरी सतह (टॉप सॉयल) को एक स्थान से दूसरे स्थान पर बहा ले जाता है। नदियों के द्वारा लाई गई मिट्टी में कार्बनिक पदार्थ और पौधों के लिए आवश्यक खनिज पदार्थ बहुत मात्रा में होते हैं। यदि किसान मिट्टी की ओर लापरवाही बरते, उसकी देखभाल न करे, तो हम इसे खो सकते हैं, यह बर्बाद हो सकती है।

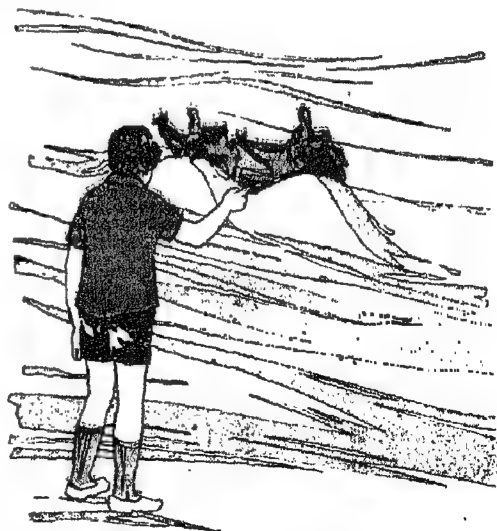
नदियों द्वारा लाई गई मिट्टी में जो बाढ़ों से एक स्थान से दूसरे स्थान पर पहुँच जाती है, ह्यूमस अधिक होता है और पौधों के लिए आवश्यक खनिज पदार्थ भी। ऐसी मिट्टी फसलों के लिए अच्छी होती है।

बहते हुए पानी के अलावा और कौन-कौन से वाहक हैं जो मिट्टी (टॉप सॉयल) को अपने साथ बहा ले जाते हैं।

आओ इस पर विचार करें

क्या होता है जब बहुत तेज हवाएँ (आँधी) चलती हैं। आँधी द्वारा अपने साथ उड़ा कर ले जाने वाली वस्तुओं की सूची बनाओ। आँधी जिन-जिन चीजों को अपने साथ उड़ा ले जाती है, बताओ, यह कहाँ पर जाकर इकट्ठी होती हैं, कहाँ-कहाँ गिरती जाती हैं।

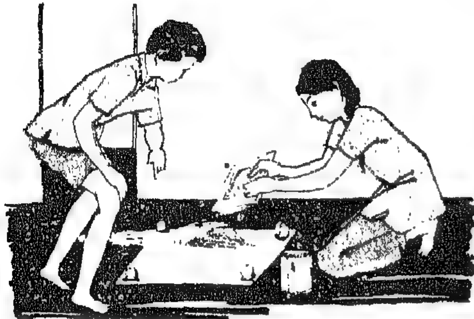
चित्र देखो, तुम्हें इसमें क्या दिखाई पड़ता है। देखो मिट्टी के टीले एक जगह से दूसरी जगह बने हुए कैसे दिखाई देते हैं। इन मिट्टी के टीलों की जगह बदलती रहती है। यह मिट्टी के टीले अपना स्थान बदलते रहते हैं। क्या तुम अनुमान लगा सकते हो ?



आओ इसका पता लगाएँ

फर्श के ऊपर एक कागज रखो।

इस कागज के ऊपर कुछ मिट्टी डालो। इसके ऊपर हवा से पंखा करो। इसके ऊपर कागज, किताब, कार्डबोर्ड लेकर हवा करो। मिट्टी को क्या होता है। ऊपरी सतह वाली



मिट्टी उड़ जाती है। यह उड़ी मिट्टी किसी दूसरी जगह इकट्ठी हो जाती है। इस मिट्टी से थोड़ी-थोड़ी दूरी पर टीले बन जाते हैं। अब दूसरी ओर से पंखा करो। देखो मिट्टी के टीले का स्थान बदल जाता है।

पवन, (टॉप सॉयल) मिट्टी की ऊपरी परत को, जिसकी हम सुरक्षा नहीं रखते, उड़ा ले जाती है। पवन इस मिट्टी को कैसे दूसरी जगह पर इकट्ठा कर देती है, जहाँ इसकी आवश्यकता प्रायः नहीं होती। पौधों की वृद्धि के लिए उपजाऊ मिट्टी (टॉप सॉयल) बहुत महत्त्वपूर्ण है। यदि यह मिट्टी बर्बाद हो जाए तो क्या होगा। मिट्टी की ऊपरी उपजाऊ मिट्टी (टॉप सॉयल) का संरक्षण बहुत ही जरूरी है। अन्यथा पानी और हवा इसे उड़ा ले जाएँगी अथवा बहा ले जाएँगी। तब फिर अच्छी फसल नहीं हो सकेगी। मिट्टी की ऊपरी परत (टॉप सॉयल) का हम किस प्रकार संरक्षण कर सकते हैं।

दो बक्सों में मिट्टी भरो। किसी बाग में से घास उखाड़ो। इसको एक बक्स की ऊपरी सतह पर लगाओ।



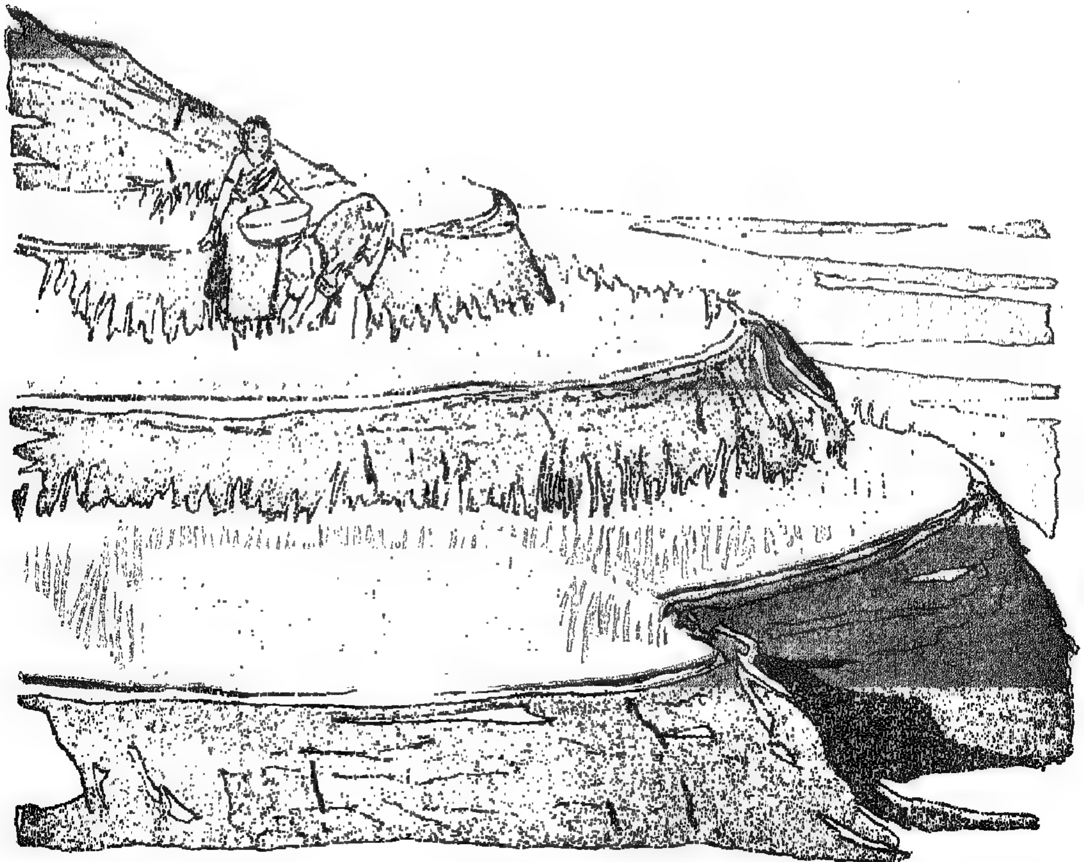
दूसरे बक्स में मिट्टी को यूँ ही छोड़ो। दोनों बक्सों को झुकाओ। दोनों के ऊपर अब एक ही तरह से पानी डालो। दोनों बक्सों की मिट्टी को देखो क्या होता है। अब विचार कर बताओ कि किसान अपने खेतों की

मिट्टी को कैसे संरक्षित कर सकते हैं ? टूट-फूट, बहने, उड़ने आदि से कैसे बचा सकते हैं ? पेड़-पौधे, झाडियाँ आदि बहता हुआ पानी तथा हवा द्वारा मिट्टी को एक स्थान से दूसरे स्थान पर बहकर नहीं जाने देते। यह इसका बचाव करते हैं, इसको संरक्षण प्रदान करते हैं, मिट्टी के संरक्षण के क्या कुछ और भी तरीके हैं ?

हमारे देश के पहाड़ी इलाकों में फसल ढलान वाली जगहों पर उगती है। यह खेती सीढ़ीनुमा खेतों में की जाती है। इन्हें हम **टैरेसिस** कहते हैं। मिट्टी के बहने को रोकने के लिए ऐसी सीढ़ियाँ (टैरेसिस) बनाई जाती हैं।

चित्र देखो। चित्र में कितनी (सीढ़ियाँ-सी)टैरेसिस दिखाए गए हैं ?

टैरेसिस (सीढ़ियाँ-सी) मिट्टी को किस प्रकार संरक्षण देते हैं, मिट्टी को किस प्रकार बचाते हैं ?



आओ इसका पता लगाएँ

दो बक्स लो। दोनों को टेढ़ा करके रखो। कुछ पत्थर के टुकड़े भी इकट्ठे करो। चित्र की तरह से एक बक्स में टेरेसिस बनाओ। दोनों बक्सों की मिट्टी पर पानी छिड़को। दोनों बक्सों में देखो, मिट्टी का क्या होता



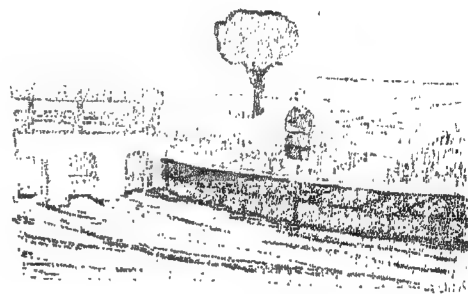
है। पहाड़ों पर बने हुए टेरेसिस इस प्रकार से मिट्टी के बहने को रोकते हैं। इनकी वजह से मिट्टी नीचे नहीं बह पाती।

मानसून की अवधि में बहुत सी नदियों में बाढ़ आ जाती है। यह पानी किनारों के ऊपर से भी बहने लगता है। ये इस बहुमूल्य मिट्टी तथा फसलों को बर्बाद कर देते हैं।

बाढ़ों से मिट्टी को हम किस प्रकार बचा सकते हैं।

आओ इसका पता लगाएँ

हमारे देश के बहुत-से भागों में बाढ़ों के प्रकोप से बचाने के लिए बाँध बनाए गए हैं। इन बाँधों की वजह से



बाढ़ नहीं आ पाती। बाँध बाढ़ों को रोकते हैं और मिट्टी, उपजाऊ परतें (टॉप सॉयल) तथा फसलें बर्बाद होने से बच जाती हैं।

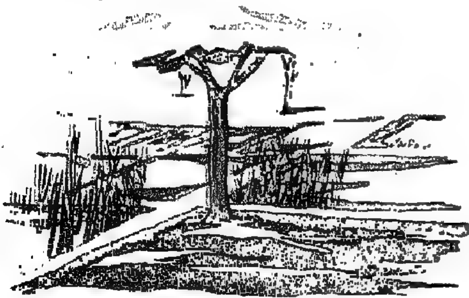
कुछ और भी करो

1. एक हाथ में मिट्टी की ऊपरी परतें (टॉप सॉयल) और दूसरे हाथ में नीचे की मिट्टी (सब सॉयल) लो। इनके रंग, [illegible]
2. मिट्टी की परतों के [illegible] [illegible] देखो

कौन-सी मिट्टी बह जाती है। यह भी देखो कि बोतलों की ढक्कनों से मिट्टी किस प्रकार बच जाती है। ऐसे ही प्रयोग छोटे-छोटे कंकड़-पत्थरों आदि से करके देखो। इनसे किए गए प्रयोग में और बोतलों के ढक्कन से किए गए प्रयोग में तुम क्या अंतर देखते हो।

3. अपने आसपास की जगहों पर यह पता लगाओ कि मिट्टी एक स्थान से दूसरे स्थान पर बह न जाए इसलिए निम्नलिखित वाहकों द्वारा कैसे रोकथाम करते हैं :

(क) बहता हुआ पानी, (ख) वर्षा (ग) पवन।



4. खेतों में चलो जहाँ फसलें उगी हुई हों। खेत की मेढ़ों को देखो। देखो मेढ़ें कितनी तरह की हैं। इनमें क्या-क्या अंतर होता है। इनके अंतरों को अपने माता-पिता तथा अध्यापकों के साथ विचार-विमर्श करो।

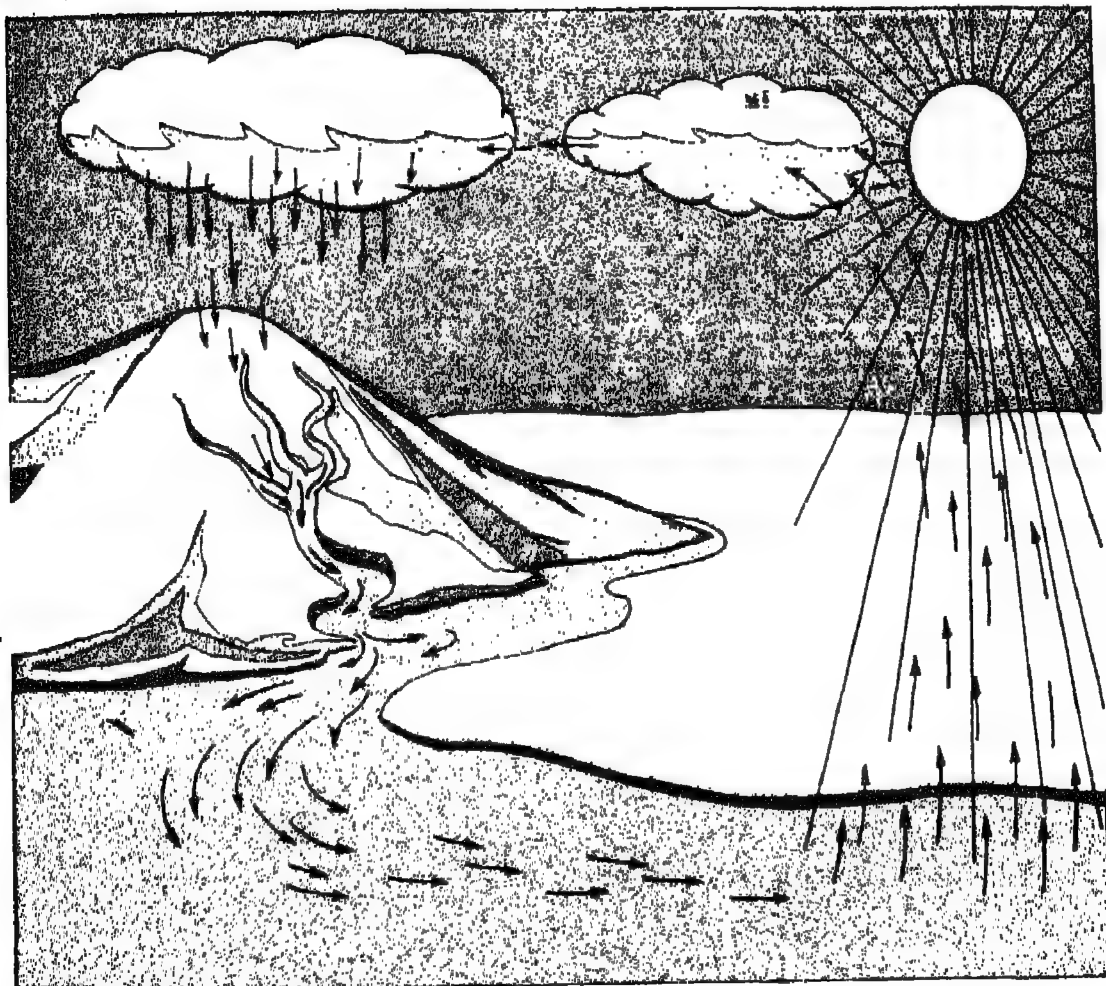
5. 'बाढ़ से बहुत नुकसान होता है।' इस पर दस वाक्य लिखो।

6. एक किसान जिसके पास पहाड़ों पर खेत है इस असमंजस में है कि खेत को वह किस प्रकार जोते, क्या उसे खेत की जुताई नीचे से ऊपर की ओर करनी चाहिए, ऊपर से नीचे की ओर करनी चाहिए, अथवा एक ओर से दूसरी ओर। यदि इस तरह के खेत तुम्हारे आसपास हैं तो जाओ और देखो उनकी जुताई किस तरह से होती है।

7. यदि तुम्हारे आसपास पहाड़ी क्षेत्र हों तो उन स्थानों पर जाओ। वहाँ देखो चट्टानें किस प्रकार से टूटी-फूटी हैं। चट्टानों का अपक्षय किस प्रकार होता है? अपक्षीण (टूटी-फूटी) चट्टानों को इकट्ठा करो।

अध्याय 4

ऋतुएँ हमारे जीवन को प्रभावित करती हैं



कक्षा तीन में मौसम में होने वाले परिवर्तनों का अध्ययन किया गया। इस प्रकार के कार्य-कलाप करके देखा कि एक हफ़्ते में मौसम कैसे बदलता

है। हमने पता लगाया था कि मौसम गर्म हो सकता है या ठंडा हो सकता है या धूप वाला भी हो सकता है और शांत भी। वर्षा का मौसम भी हो सकता है अथवा धूप वाला, बादलों वाला अथवा साफ मौसम। मौसम में यह परिवर्तन कौन करता है? क्या कारण हो सकता है?

आओ इस पर विचार करें

गर्मियों में या धूप वाले दिनों में तुम्हें अधिक गर्मी कहाँ लगती है— धूप में या छाया में। इस अंतर को कैसे बताओगे?

सूर्य की गर्मी से पृथ्वी गर्म होती है। सूर्य से गर्मी अन्य वस्तुओं को भी मिलती है। पृथ्वी गर्म होती है। पृथ्वी की और अन्य वस्तुएँ भी गर्म हो जाती हैं। भूमि, नदियाँ, झीलें, सागर, महासागर, पेड़-पौधे, सड़क, घर, मकान, पुल आदि सूर्य की गर्मी से गर्म हो जाते हैं। गर्मियों में बहुत गर्मी होती है। दोपहर को नंगे पाँव चलना मुश्किल हो जाता है। जाड़ों में दोपहर को नंगे पाँव चला जा सकता है। तुम्हें शायद गर्मी भी नहीं लगती। इस अंतर को कैसे बताओगे?

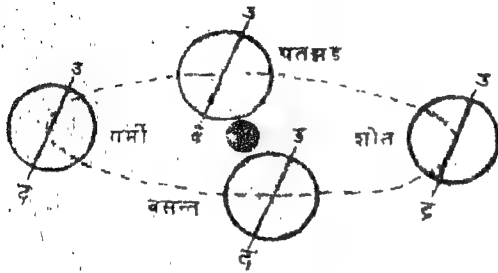
आओ इस पर विचार करें

नीचे दी गई तालिका को देखो। इसमें सूर्य के निकलने और छिपने का समय गर्मियों और जाड़ों का दिया हुआ है।

गर्मियों का दिन कितने घंटे का होता है और जाड़ों में कितने घंटे का। गर्मियों में धूप ज्यादा समय रहती है, जाड़ों में कम। इसी कारण गर्मियों में सर्दियों की अपेक्षा अधिक गर्मी होती है।

	गर्मियों में	जाड़ों में
सूर्य का निकलना	5.24	7.10
सूर्य का छिपना	6.22	5.29

गर्मियों में दिन बड़े और जाड़ों में छोटे होते हैं क्योंकि पृथ्वी अपने अक्ष पर सूर्य के चारों ओर परिक्रमा



करती है। इसके बारे में अध्याय-8 में ज्यादा पढ़ेंगे। ऊष्मा देने के अलावा सूर्य किस प्रकार से मौसमों में परिवर्तन का कारण है ?

दो एक-से चौड़े मुँह वाले बर्तन लो। एक में बालू भरो और दूसरे में



पानी। दोनों को छुओ और छूकर देखो कौन-सा गर्म लगता है। दोनों बर्तनों को धूप में लगभग दो घंटे रखो। फिर पानी और बालू को छूकर देखो उनमें से कौन-सा अधिक गर्म हो जाता है।

अब दोनों बर्तनों को कमरे के अंदर ले जाओ। एक घंटे तक कमरे में रखो। दोनों बर्तनों में रखे बालू और पानी को छुओ। अब कौन-सा गर्म लगता है। यदि थर्मामीटर हो तो बालू और पानी का ताप नापो। उनमें से कौन-सा जल्दी गर्म हुआ और कौन-सा ठंडा। प्रकृति में भी क्या ऐसा होता है ?

भूमि पानी की अपेक्षा जल्दी गर्म हो जाती है और जल्दी ठंडी भी हो जाती है। इससे किसी स्थान पर हवा ज्यादा गर्म हो जाती है और किसी स्थान पर ज्यादा ठंडी। वर्षा भी सूर्य के कारण होती है। वर्षा करने में सूर्य का भी महत्वपूर्ण स्थान है। जब वर्षा हो रही हो उस समय ध्यानपूर्वक देखो। क्या होता है जब पानी बरसता है ?

वर्षा में एक साफ़-सुथरा बर्तन



रखो। इस बर्तन को वर्षा में रखा रहने दो, जब तक कि काफी मात्रा में पानी इकट्ठा न हो जाए। देखो यह कितना साफ़ है। क्या इसको पीया जा सकता है? यह साफ़ बादलों से आया है।

अब उस पानी को देखो जो सड़कों, गलियों में बह रहा है। बर्तन में जो पानी इकट्ठा किया था उस पानी की और सड़कों पर बहने वाले पानी की तुलना करो। उनमें क्या अंतर है? सड़क या जमीन पर बहते हुए पानी को एक कटोरी में रखो। इसमें क्या-क्या चीजें हैं? उनका पता लगाओ। बहता हुआ पानी बहुत-सी चीजों को बहा ले जाता है। इनमें कुछ न घुलने वाली होती हैं, जो



तैरती हैं या इसमें डूब जाती हैं। इनमें से कुछ घुलने वाली होती हैं और पानी में घुल जाती हैं। ये भी पानी के साथ बह जाती हैं। इससे पानी पीने योग्य नहीं रहता। ऐसे पानी को हम कहते हैं कि ये दूषित हो गया है। इस पानी को नहीं पीना चाहिए। सड़कों, गड्ढों, तालाबों आदि के पानी को पीना नहीं चाहिए।

और कौन-कौन-से तरीके हैं जिनसे पानी दूषित हो जाता है ?

आओ इसका पता लगाएँ

किसी तालाब या झील पर चलो। देखो, पशु इसके पानी को किस प्रकार गंदा कर रहे हैं। जैसा की पृष्ठ 42 पर दिखाया गया है, ऐसे पाँच कारण जिनसे तालाब का पानी दूषित हो जाता है बताओ। कई स्थानों पर तुम्हें बहता हुआ पानी मिलता है। कुछ ऐसे स्थान बताओ जहाँ तुमने बहता हुआ पानी देखा है। कुछ जगहों पर पानी जमा रहता है, न पानी आता है और न जाता है। ऐसे पानी को **"रुका हुआ पानी"** कहते हैं। ऐसे रुके हुए पानी में दूषण की मात्रा बढ़ती जाती है। दिन-ब-दिन पानी और अधिक दूषित होता जाता है। जल्दी ही ऐसे पानी में से बदबू आने लगती है। यह स्वास्थ्य के लिए हानिकारक होता जाता है। इससे वातावरण भी दूषित होता जाता है। मलेरिया आदि रोगों के फैलने की संभावना हो जाती है। पानी को साफ़ किन-किन तरीकों से किया जा सकता है।

आओ इसका पता लगाएँ

नदी, तालाब आदि का गंदा-सा पानी लो और इसे किसी काँच के बर्तन में रखो। कुछ देर तक इस



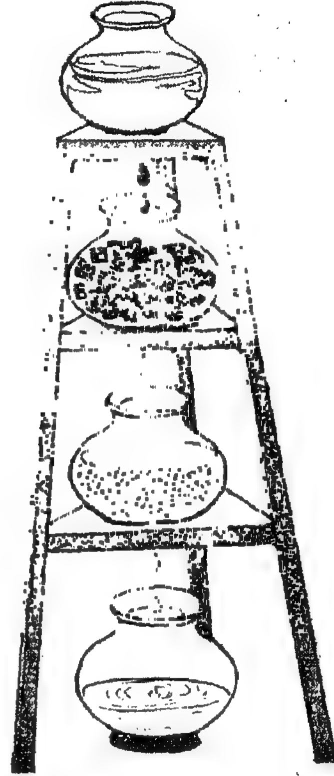
पानी को यों ही रख छोड़ो। जब पानी साफ़ हो जाए तब अपने प्रेक्षणों को लिखो। साफ़ पानी को दूसरे बर्तन में इस प्रकार डालो कि तली पर जमी हुई मिट्टी हिले-डुले नहीं। पानी को साफ़ करने के और कौन-कौन-से तरीके हैं।

एक गमला लो। गमले की तली के छेद पर एक कपड़ा रखो। आधे गमले तक साफ़ बालू और लकड़ी के



कोयले की परत लगाओ। इसके ऊपर गंदा पानी भरो। छेद में से टपकते पानी को इकट्ठा करो। क्या यह पानी साफ़ है ? गाँव में भी पीने के पानी को पीने योग्य बनाने के लिए इस प्रकार का बालू, कोयला और कंकड़ों की परतें लगा करके 'फिल्टर' बनाकर पानी साफ़ करने का प्रबंध किया जा सकता है।

तुम्हारे गाँव में बना कुँआ क्या ढका हुआ है ? ट्यूबवेल भी है क्या ? इन कुँओं का पानी अक्सर पीने योग्य होता है। ऐसा इसलिए है कि यह पानी पृथ्वी के अंदर बिछी हुई मिट्टी और बालू आदि की परतों में से



होकर आता है। मिट्टी में जो खनिज पदार्थ होते हैं वह भी इस पानी में धुल जाते हैं। चित्र में दिखाया गया



है कि पानी का क्या होता है जब वह मिट्टी में से गुजरता है।

कुँए के पानी को पीने योग्य बनाए रखने के लिए क्या करना



चाहिए। इसके लिए यह जरूरी है कि कुँओं में से पानी निकालने के लिए डाला गया बर्तन साफ़-सुथरा होना चाहिए। इसके अलावा और क्या करना चाहिए ?

ऐसा भी होता है कि पानी तो साफ़ होता है परंतु वह पीने योग्य नहीं होता। यदि तुम्हें साफ़ पानी मिले और यह भी संशय हो कि यह पानी पीने योग्य नहीं है, तो उसे पीने योग्य बनाने के लिए क्या करोगे ?

उत्तम तरीका है कि पानी को उबालो।

पानी जब उबाला जाता है तब इसके रोगाणु नष्ट हो जाते हैं। ऐसा करने से पानी पीने योग्य हो जाता है।

कक्षा-3 में तुमने पढ़ा कि बादल और जलचक्र कैसे होता है। तुमने यह भी पता लगाया था कि पानी वाष्प में लगातार बदलता रहता है। पानी का पानी की वाष्प में बदलना **वाष्पन** कहलाता है। इसे पाठ के प्रथम पृष्ठ पर



देखो। उन तीरों को बताओ जो वाष्पन का संकेत करते हैं। क्या तुम्हें पता है कि भाप से पानी किस प्रकार बनाया गया था। चित्र देखो, शायद तुम्हें बात याद आ जाए। पानी की वाष्प या भाप का पानी में बदलना **द्रवणन** कहलाता है। अब बताओ, उसी चित्र में द्रवणन को कौन-से तीर दर्शाते हैं। इस प्रकार से हमने यह पता लगा लिया कि जलचक्र में द्रवणन और वाष्पन दोनों होते हैं।

वाष्पन सदैव होता रहता है। कभी यह तेज होता है और कभी धीरे। क्या तुम बता सकते हो कि वाष्पन किन परिस्थितियों में ज्यादा होता है और किन में कम ?

आओ इस पर विचार करें

सूखा, नम, गर्म अथवा ठंडा मौसम किसी भी तरह का मौसम हो सकता है। किसी मौसम में वाष्पन ज्यादा और किसी में कम। विभिन्न प्रकार के मौसमों में किस मौसम में वाष्पन अधिक होता है और किस में कम। यह हम कैसे जान सकते हैं ?

वाष्पन का कम अथवा ज्यादा होना बताने के लिए हमें वाष्पन का मापन करना होगा। वाष्पन को हम मापें कैसे ?

आओ इसका पता लगाएँ

काँच की एक बोतल लो। उस पर कागज की एक पतली पट्टी चिपकाओ। बोतल को पानी से भरो। पानी के तल पर निशान लगाओ। बोतल को यूँ ही खुला छोड़ो। स्कूल में, खाने की छुट्टी में रोजाना पानी



के तल पर निशान लगाते रहो। पानी के तल पर क्या प्रभाव पड़ता है ?

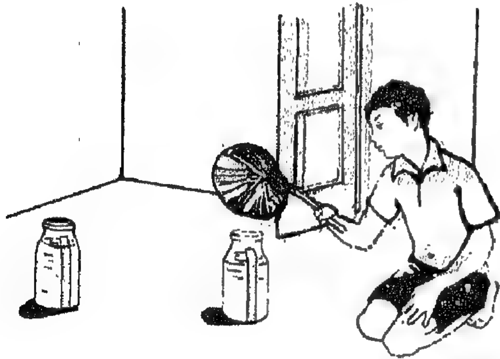
इस प्रकार वाष्पन का मापन कर सकते हैं। इस विधि से हम किस प्रकार पता लगा सकते हैं कि वाष्पन किन-किन परिस्थितियों में ज्यादा होता है।

क्या पानी तेज हवा वाले मौसम में ज्यादा वाष्पित होता है ?

आओ इसका पता लगाएँ

चौड़े मुँह वाली दो बोतलें लो।

इनमें ऊपर तक पानी भरो। प्रत्येक बोतल पर कागज की एक पट्टी चिपकाओ। एक बोतल को कमरे के एक कोने में रखो। दूसरी बोतल को बिजली के पंखे के नीचे रखो। यदि यह पंखा न हो तो बारी-बारी से अपने मित्रों की सहायता से पंखा करते रहो। लगभग एक घंटे तक पंखा चलने दो या पंखा करो। अब इस बोतल पर पानी के तल पर निशान लगाओ। दोनों स्थितियों में



क्या अंतर मिला ? इस अंतर की चर्चा अपने मित्र व अध्यापक महोदय से करो।

(1) एक-सी बोतलें क्यों लीं ?

(2) दोनों बोतलों में समान तल तक पानी क्यों भरा ?

(3) एक बोतल के ऊपर पंखा क्यों किया ?

पानी क्या अधिक वाष्पित होता है जब मौसम गर्म होता है ?

दो बोतलें लो। उनमें समान सतह तक पानी भरो। एक को धूप



में और दूसरी को छाया में रखो। दोनों में पानी के तल पर निशान लगाओ। चार घंटे के बाद फिर इन दोनों में पानी के तल पर निशान लगाओ। क्या कोई अंतर मिलता है ? किस बोतल में से पानी अधिक वाष्पित हुआ ?

क्या पानी अधिक वाष्पित होता है जब कि उसका क्षेत्र ज्यादा हो ?

आओ इस पर विचार करें

एक गिलास और एक थाली लो। गिलास में ऊपर तक पानी भरो। इसे थाली में डालो। फिर गिलास में ऊपर तक पानी भरो। इन दोनों को किसी



शांत स्थान पर दो-तीन दिन के लिए यूँ ही खुला छोड़ दो । सुबह-शाम इसे देखो ।

एक-दो दिन के बाद तुम्हें पता चल जाएगा कि पानी वाष्पित हो गया है । गिलास में पानी के तल पर निशान लगाओ । गिलास के पानी को फेंको और थाली का पानी गिलास में पलटो । देखो पानी की मात्रा कितनी है । क्या अंतर मिलता है ? किसमें



पानी अधिक बचा, गिलास में या थाली में ?

क्या तुम बता सकते हो कि सुखाने के लिए कपड़ों को फैलाकर क्यों डाला जाता है ?

क्या पानी तब अधिक वाष्पित होता है जब हवा सूखी होती है ?

बरसात के दिनों में कपड़े बहुत देर से सूखते हैं । लेकिन जब दिन शुष्क होते हैं तब कपड़े बहुत जल्दी सूख जाते हैं । ऐसा इसलिए होता है कि बरसात के दिनों में हवा में नमी ज्यादा होती है और इसी कारण बरसात में वाष्पन धीरे-धीरे होता है ।

पानी वाष्पित होता है और हवा में चला जाता है । ऊपर पहुँचकर यह ठंडा होता है । ठंडा होने से पानी का वाष्प पानी की बूँदों में बदल जाता है । वाष्प से बादल बन जाते हैं । पानी की छोटी-छोटी बूँदें वर्षा का रूप धारण कर लेती हैं । यदि ऊपर बहुत ज्यादा ठंडा होता है तो पानी का वाष्प बर्फ की क्रिस्टलों का रूप धारण कर लेता है ।

वातावरण का पानी का वाष्प विभिन्न परिस्थितियों में भिन्न-भिन्न

प्रकार से द्रवित होता है।

इसके द्रवित होने की क्या परिस्थितियाँ हैं ?

ऊपरी वायुमंडल में जब ज्यादा ठंडक होती है तब कभी-कभी ओले पड़ जाते हैं। जब वातावरण और ठंडा हो, जैसे पहाड़ों पर तो बर्फ (हिम) गिर जाती है।

क्या तुमने कभी देखा है कि ठंडे मौसम में सुबह-सुबह जमीन के ऊपर धुआँ-सा दिखाई देता है। वातावरण इतना धुँधला होता है कि तुम्हें पास की चीजें भी साफ़ दिखाई नहीं देती। इसे **कोहरा** कहते हैं।

कोहरा जब पड़ता है तब पानी का वाष्प पानी की छोटी बूँदों के रूप में द्रवित हो जाता है। जब तुम जाड़े के दिनों में सुबह-सुबह खेतों पर या बाग में जाते हो तब पेड़-पौधों और घास के ऊपर कुछ दिखाई देता है। तुमने क्या इस बात पर विचार किया है कि तुम्हारे पैर गीले क्यों हो जाते हैं ? घास के ऊपर क्या तुमने चमकते हुए छोटे-छोटे कण देखे हैं ? यह ओस के कण होते हैं। सुबह-सुबह यह कितने चमकते हुए दिखाई देते हैं।

जब जमीन और ज्यादा ठंडी हो जाती है तब इसके ऊपर का पानी जम जाता है। इसको **पाला** कहते हैं। इससे आलू जैसी फसलों को बहुत नुकसान होता है।

मौसम का हम सब पर प्रभाव पड़ता है। इससे हमारी दिनचर्या प्रभावित होती है। हम लोगों के लिए प्रत्येक दिन का मौसम महत्वपूर्ण है। मौसम के अलावा साल में कई ऋतुएँ आती हैं। कौन-से महीनों में ज्यादा गर्मी होती है और कौन-से महीनों में ज्यादा सर्दी होती है। ऋतुओं से हमारा जीवन कैसे प्रभावित होता है ?

जाड़ों में हमें अपने शरीर को सर्दी से बचाने के लिए अपने घरों को गर्म रखना पड़ता है। घरों को गर्म रखने के क्या-क्या तरीके हैं ?

गर्मियों में हमें अपने आपको गर्मियों से बचाना होता है। गर्मी से हम किस प्रकार अपनी रक्षा करते हैं ?

ऋतुएँ हमारे जीवन को प्रभावित करती हैं। क्या ऋतुओं के परिवर्तन से पेड़-पौधों और पशुओं का जीवन भी प्रभावित होता है ?

आओ कुछ और विचार करें

कुछ जीव-जंतुओं के नाम बताओ जो तुम्हें वर्षा ऋतु में दिखाई देते हैं। वे जाड़ों में दिखाई नहीं देते, क्यों ?

मेंढक और केंचुए वर्षा ऋतु में खूब दिखाई देते हैं। जाड़ों में यह जमीन के अंदर रहते हैं। उन और जीव-जंतुओं का क्या होता है जो जाड़ों में दिखाई नहीं देते ? वह कहाँ चले जाते हैं ?

नीम अथवा पीपल के वृक्ष को स्कूल में, स्कूल के बाहर या खेतों में जहाँ भी तुम्हें मिले, देखो। यह भी देखो इसमें पत्तियाँ कब आती हैं, कब इसका पतझड़ होता है ?

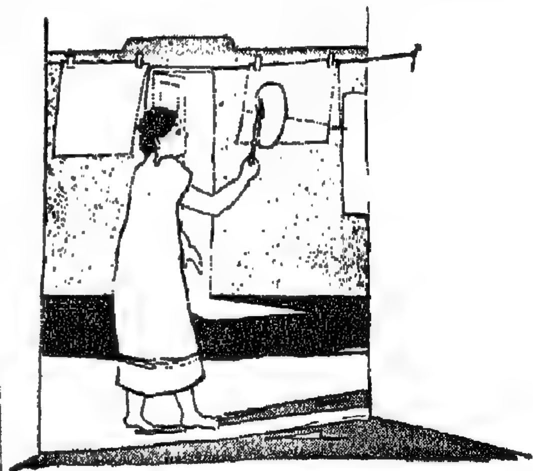
कुछ और भी करो

(1) घर पर पानी साफ़ करने के लिए "फिल्टर" बनाओ। इसके द्वारा कुछ गंदे पानी को साफ़ करो। इस साफ़ पानी को कटोरी में रखकर खूब गर्म करो। अपने प्रेक्षणों को लिखो।

(2) गाजर, मूली, टमाटर, पालक, लैट्यूस के बीज लो। अपने स्कूल में इन्हें उगाओ। पौधे जब बढ़ते जाएँ तब उनमें होने वाले परिवर्तनों को लिखो। इनमें तुम्हें जो भी परिवर्तन दिखाई पड़ता हो, पृष्ठ 51 पर बनी तालिका की तरह की तालिका बनाकर अपने प्रेक्षणों को लिखो।

यह परिवर्तन ऋतुओं से किस प्रकार संबंधित हैं।

(3) चित्र का अध्ययन करो। इसमें क्या दिखाया है ? किस परि-



स्थिति में पानी ज्यादा वाष्पित होगा ?

(4) "मौसमों के परिवर्तनों में सूर्य एक महत्वपूर्ण भूमिका निभाता है," इस पर दस वाक्य लिखो।

(5) पानी, मौसम और ओस से संबंधित कुछ कविताएँ याद करो।

बीज	फूल आने की तिथि और दिन	फल आने की तिथि और दिन
गाजर		
मूली		
टमाटर		
पालक		
लैट्यूस		

अध्याय 5



विविध प्रकार के पदार्थों से हम परिचित हैं। उनके बारे में हम जानते हैं। कुछ नमक और चीनी की तरह ठोस होते हैं, कुछ पानी और मिट्टी के तेल की तरह द्रव हैं, कुछ हवा की तरह गैस होती हैं। हम यह भी जानते हैं कि ठोस पदार्थ का निश्चित आकार होता है। द्रव पदार्थ

उन बर्तन का रूप ग्रहण कर लेते हैं जिसमें उन को रखा जाता है। गैस पदार्थों का न अपना आकार होता है और न आयतन। ठोस, द्रव और गैस पदार्थों में हम अंतर जानते हैं। एक ठोस पदार्थ से दूसरे ठोस पदार्थ को हम कैसे पहचानते हैं ?

लकड़ी का कोयला, चाक, (खड़िया,) नमक और चीनी अलग-अलग थैलियों में रखी गई हैं। यह पता करने की कोशिश करो कि कौन-सी थैली में कौन-सा पदार्थ है।

तुम इनमें से यह आसानी से बता सकते हो कि कौन-सा लकड़ी का कोयला है। तुमने यह पहचाना कैसे ? तुम जानते हो कि लकड़ी का कोयला काला होता है। इससे लकड़ी के कोयले की पहचान में सहायता हुई। काला रंग लकड़ी के कोयले का एक गुण है। अब तीन जो सफ़ेद पदार्थ दिए गए हैं, उनमें से वे क्या-क्या हैं। इनका पता कैसे लगा सकते हो।

इनका पता करने के लिए इनके गुण जानने चाहिए। इसके लिए चाक (खड़िया,) नमक और चीनी लो। इन तीनों को अलग-अलग पीस लो। कटोरी में रखकर इनको अलग-अलग गर्म करो। नीचे बनी तालिका बनाकर अपने प्रेक्षण लिखो।

प्रेक्षणों से यह पता चला कि गर्म करने पर केवल चीनी काली पड़ जाती है। अब कोई तरीका बताओ

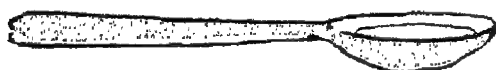
पदार्थ का नाम	गर्म करने पर क्या होता है	
	रंग में कोई परिवर्तन नहीं	रंग बदलता है
चाक (खड़िया)		----------------से
नमक		----------------से
चीनी		----------------से

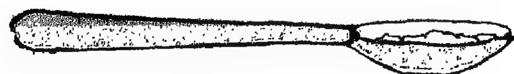
जिससे तुम पता लगा सको कि जो पहले तुम्हें तीन थैलियाँ दी हुई हैं उनमें से कौन-सा पदार्थ चीनी है ।

गर्म करने पर उसका रंग काला









हो जाना चीनी का गुण है । क्या तुम उन अज्ञात पदार्थों में से प्रत्येक का पता लगाने के लिए कुछ और गुण पता कर सकते हो ।

आओ इसका पता लगाएँ

ज्ञात रूप में नमक, चाक और चीनी लो । इन तीनों को थोड़ी-थोड़ी मात्रा में लो । पानी में मिलाकर हिलाओ । देखो क्या होता है । इन तीनों ज्ञात पदार्थों में से बताओ



कौन-सा पानी में घुल गया ? कौन-सा पानी में नहीं घुला । कौन-से दो पदार्थ पानी में घुल गए ? उपर्युक्त प्रेक्षणों के आधार पर खड़िया और नमक में अथवा चीनी की पहचान का कोई तरीका बताओ ।

कुछ पदार्थ पानी में घुल जाते हैं । कुछ नहीं घुलते । ऐसे पाँच पदार्थों के नाम लिखो जो पानी में घुल जाते हैं। पाँच ऐसे पदार्थों के भी नाम लिखो जो पानी में नहीं घुलते ।

क्या होता है जब कोई पदार्थ पानी में घुल जाता है ?

आओ प्रयोग करें

तीन-चार पोटाशियम परमैंगनेट के क्रिस्टल लो । पानी से भरे गिलास में एक क्रिस्टल डालो । इस पानी को हिलाओ-डुलाओ नहीं । ध्यान से देखो इस पानी में क्या-क्या परिवर्तन होता है ? पानी में जो परिवर्तन होते हैं, उन्हें लिखो ।

क्रिस्टल छोटे-छोटे टुकड़ों (कणों) में टूट जाता है । ये छोटे-छोटे कण पानी में धीरे-धीरे घुलते हैं । इससे पानी का रंग बदल जाता है । क्या अब



भी तुम्हें क्रिस्टल दिखाई पड़ता है ? क्या पूरे पानी का रंग एक-सा है ? कुछ घंटों के बाद फिर इस घोल को देखो । क्या यह घोल बिल्कुल साफ़ (पारदर्शक) है ? बिल्कुल साफ़ (पारदर्शक) घोल से यह पता चलता है कि छोटे-छोटे कण पूरे पानी में एक समान रूप से फैल गए हैं और घोल एक समान हो गया है ।

जब ठोस पदार्थ पानी में घुल जाते हैं, तब क्या पानी का तल बदल जाता है ?

काँच की एक बोतल लो । इस पर कागज की एक पट्टी चिपकाओ ।



कागज पर निशान लगाओ । बोतल में निशान तक पानी भरो । इसमें नमक के कुछ बड़े क्रिस्टल डालो । पानी के नए तल पर निशान लगाओ ।

नमक घोलने के लिए पानी को हिलाओ । अब फिर पानी के तल पर निशान लगाओ । क्या यह नीचे आ गया ? पानी के तल में इस समय क्या अंतर नजर आता है । क्या इस अंतर को समझा सकते हो ?

ढकनेदार एक बोतल लो। इसमें कुछ मूँग और कुछ कंचे डालो। बोतल का ढक्कन बंद करो। दोनों का जो तल है उस पर निशान लगाओ।

अब धीरे-धीरे बोतल को हिलाओ और इस प्रकार हिलाओ कि मूँग और कंचे परस्पर मिल जाएँ। अब देखो इस बार तल कितना रहा। क्या तल में परिवर्तन आया। ऐसा क्यों हुआ ? मूँग ने कंचों के बीच में स्थान ग्रहण कर लिया।



इस प्रकार हम नमक के घुलने पर पानी के तल में होने वाले अंतर की व्याख्या कर सकते हैं। कैसे ?

नमक बहुत छोटे-छोटे कणों से मिलकर बना है। पानी भी बहुत छोटे-छोटे कणों से मिलकर बना है। यह कण इतने छोटे होते हैं कि हम उन्हें आँख से नहीं देख पाते। पानी के कणों के बीच में जगह होती है। पानी के कण इनके बीच में चले जाते हैं। अत: पानी का तल गिर जाता है।

अभी हमने प्रयोग करके देखा कि एक ठोस पदार्थ पानी में किस प्रकार घुलता है। इसके कण समस्त घोल (विलयन) में किस प्रकार फैल जाते हैं। क्या हम इस घोल में से घुले हुए पदार्थ को दुबारा प्राप्त कर सकते हैं ?

एक कटोरी में थोड़ा पानी लो और उसमें दो चम्मच भर कर नमक घोलो। पानी को हिलाओ और नमक को घोलो। क्या कुछ ऊपर तैरता दिखाई देता है ? यदि कुछ ऐसा है तो उसे कैसे दूर करोगे ?

घोल को छानो। इसका आधा भाग किसी दूसरी कटोरी में रखो।



घोल के आधे भाग को गर्म करो। खूब गर्म करने के बाद देखो क्या बचता है ? यह जो कुछ बचा पदार्थ है वह पहले वाले नमक से किस प्रकार भिन्न है। जो कुछ पदार्थ बचा है इसे आगे के प्रेक्षणों के लिए रखो। इसके अलावा पानी को अलग करने की क्या कोई और विधि है ?

आओ इसका पता लगाएँ

घोल का आधा भाग जो कटोरी में रखा है, उसे यूँ ही रखा रहने दो। इसका पानी धीरे-धीरे वाष्पित होता रहेगा। लगातार तीन दिन तक रोजाना नियमित समय पर देखो और प्रेक्षण लिखो। क्या बचता है ? क्या यह पहले वाले नमक से भिन्न है। गर्म करने के बाद दूसरी कटोरी में



बचे पदार्थ और इस कटोरी के पदार्थ में क्या-क्या बातें भिन्न हैं ?

दोनों कटोरियों के बचे पदार्थ नमक के क्रिस्टल हैं। धीरे-धीरे वाष्पन से क्रिस्टल बड़े बनते हैं। नमक के क्रिस्टल बड़े होते हैं।

समुद्र के पानी में नमक बहुत घुला होता है। इस समुद्र के पानी को उथली क्यारियों में रखकर धीरे-धीरे वाष्पन द्वारा इसमें से नमक अलग किया जाता है।

भिन्न-भिन्न पदार्थों के क्रिस्टलों के आकार अलग-अलग होते हैं। नमक चीनी, गंधक और फिटकरी के क्रिस्टलों को देखो। इन क्रिस्टलों का रूप जानने का प्रयत्न करो।

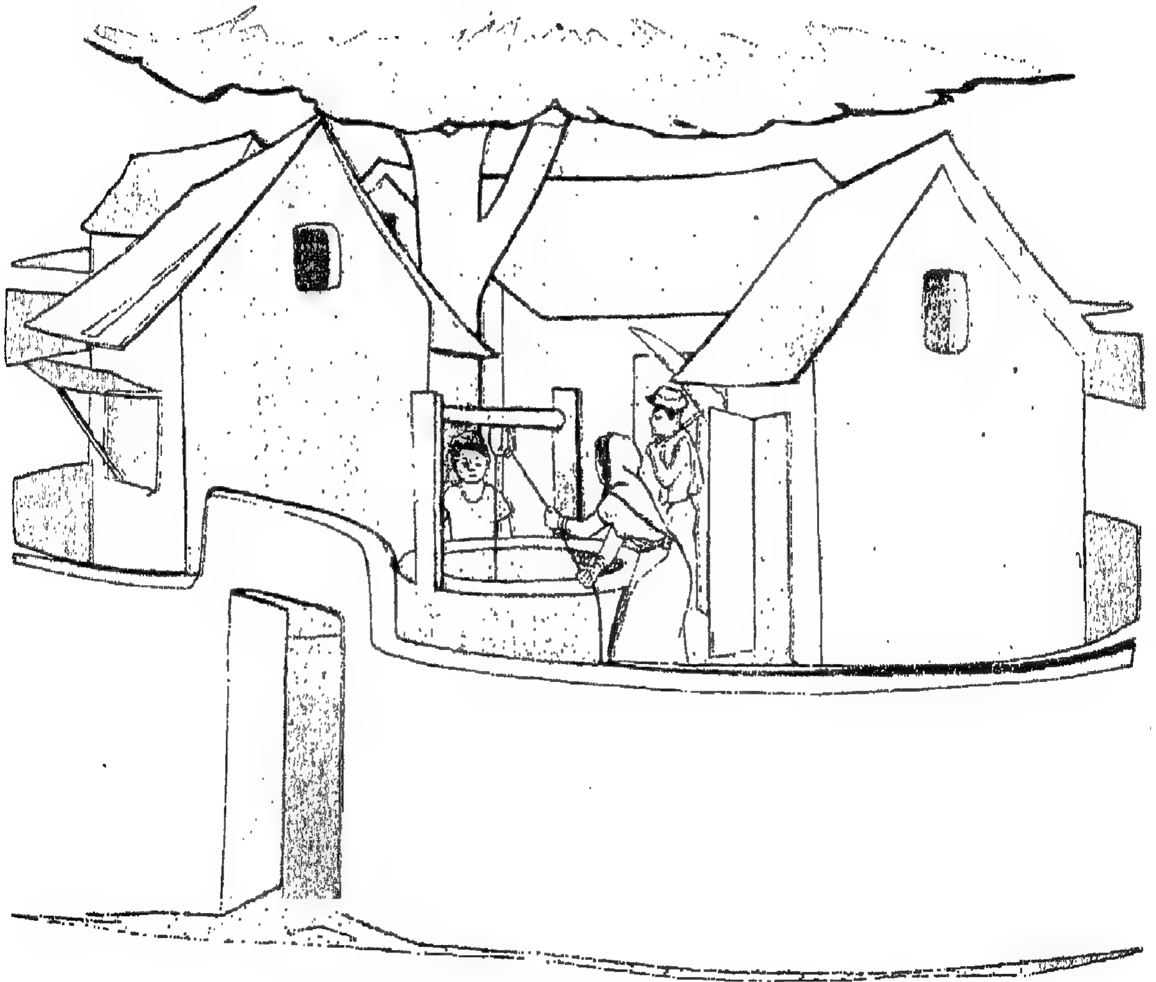
कुछ और भी करो

(1) दो कटोरियाँ लो। एक कटोरी में ठंडा पानी और दूसरी कटोरी में उतना ही उबलता हुआ पानी लो। दोनों में एक-एक चम्मच चीनी डालो। दोनों कटोरियों को बिना हिलाए-डुलाए देखो क्या होता है। कौन-सी कटोरी की चीनी जल्दी घुल गई। ऐसा ही प्रयोग नमक और फिटकरी से करो। अपने प्रेक्षण लिखो और अध्यापक महोदय को दिखाओ।

(2) कुछ और ऐसे पदार्थों को इकट्ठा करो जो पानी में घुलनशील हैं।

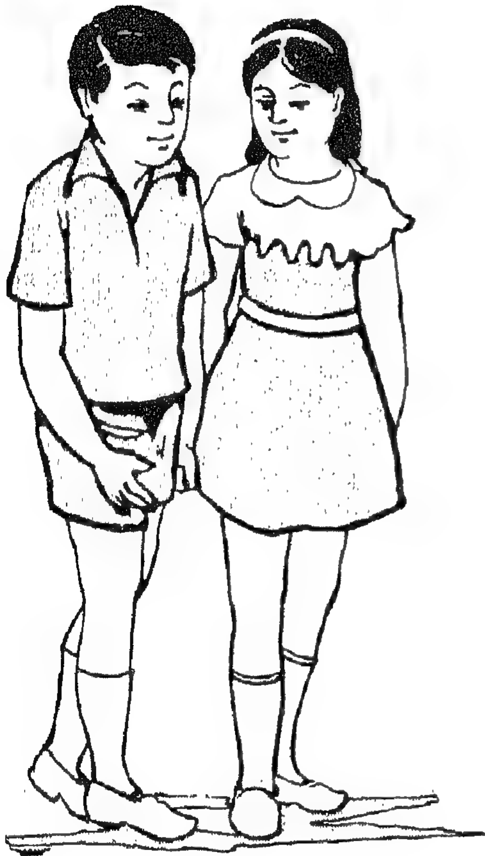
अध्याय 6

घर और वस्त्र



तुम्हें जीवित रहने के लिए भोजन और पानी की आवश्यकता है। अच्छी तरह रहने के लिए इनके अलावा और चीजें भी जरूरी हैं। उनमें से आश्रय और वस्त्र बहुत महत्वपूर्ण हैं। कपड़ों से बदन में निखार आता है और भले,

सुन्दर लगने लगते हो। वस्त्रों से गर्मी, सर्दी और वर्षा से बचाव होता है। पूरे वर्ष क्या तुम एक ही तरह के तथा एक-से कपड़े पहने रहते हो?



आओ इन पर विचार करें

बताओ, जाड़ों में कौन-से कपड़े पहनते हो और गर्मियों में कौन-से? क्या तुमने इस बात पर कभी विचार किया है कि गर्मियों के कपड़े जाड़ों के कपड़ों की अपेक्षा और तरह की सामग्री से बने होते हैं। गर्मी और जाड़ों के कपड़ों में अंतर उन जगहों पर ज्यादा होता है जहाँ बहुत सर्दी पड़ती है। कपड़ा बनाने के लिए



किस-किस प्रकार के पदार्थ (सामग्री) काम आते हैं?

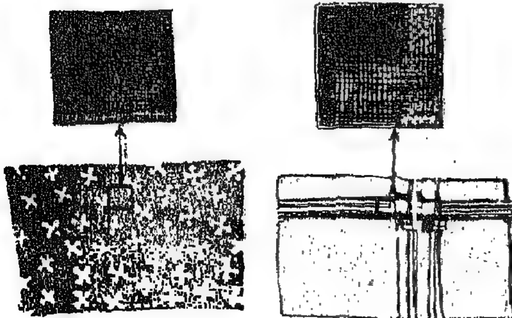
आओ इसका पता लगाएँ

घर से कपड़ों के टुकड़े इकट्ठे करके लाओ। अपने आसपास के किसी दर्जी महोदय से प्रार्थना करके उसके



यहाँ से कतरन माँग लाओ। उन टुकड़ों (कतरनों) को ध्यानपूर्वक देखो। इन कतरनों का क्या वर्गीकरण कर सकते हो ? इन विभिन्न प्रकार के कपड़ों का किस-किस आधार पर वर्गीकरण कर सकते हैं ? तुम्हारे द्वारा इकट्ठे किए गए कपड़ों में रुई के सूती, गर्म, नाइलोन, रेशमी वस्त्र हो सकते हैं। ये सब कपड़े कैसे बनाए जाते हैं ?

सूती अथवा किसी और प्रकार के



वस्त्र का एक टुकड़ा लो। इसे ध्यान से देखो। तुम्हें क्या दिखाई देता है ? क्या तुम्हें वह धागा दिखाई देता है जिससे यह बनाया गया है ? धागे लंबाई-चौड़ाई में एक दूसरे के ऊपर लगे होते हैं। इनसे जाल-सा बना होता है। क्या इनकी बुनाई पता चलती है ? यह किस प्रकार बुना जाता है ? इन धागों से कपड़ा मिलों में अथवा हथकरघे से बुनकर बनाया जाता है। हैंडलूम 'हथकरघे' का कपडा कैसे बुना जाता है ?

किसी बुनकर के यहाँ चलो। वहाँ देखो कि रुई से धागा कैसे बनाया जाता है। इन धागों को किस प्रकार



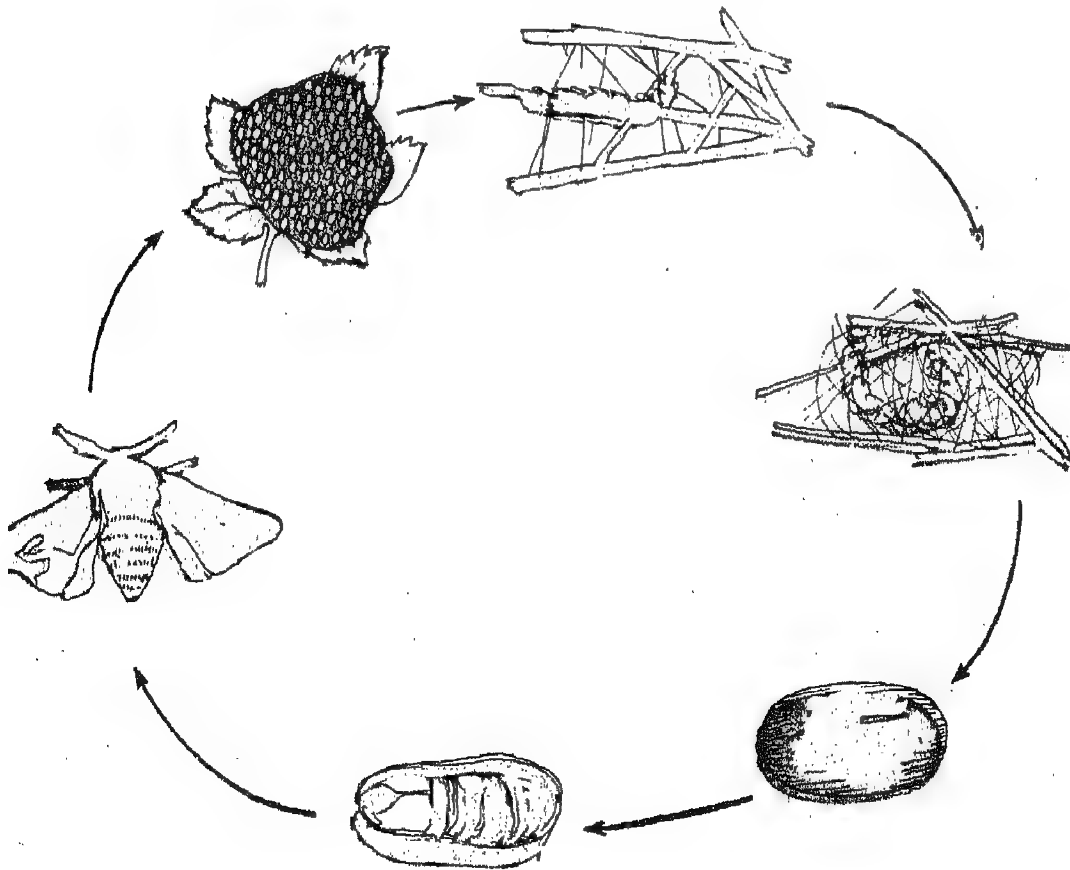
करघों में लगाया जाता है और किस प्रकार कपड़ा बुना जाता है। इस बात को भी ध्यान से देखो कि बुन-

कर महोदय विविध रंग और डिजाइन का कपड़ा किस प्रकार बनाता है। बुनते समय किस प्रकार डिजाइन डालता है। हथकरघे का चित्र देखो। महात्मा गाँधी ने चरखे के उपयोग को बहुत महत्व दिया। वर्तमान में खादी एक महत्वपूर्ण उद्योग धंधों में से है। हमारा भारत हाथ के बुने हुए कपड़ों के लिए सदैव से बहुत मशहूर रहा है। ऐसा कपड़ा हम विदेशों को भी भेजते हैं।

हमारे देश में बड़ी-बड़ी मिलें हैं। इन मिलों का बनाया हुआ कपड़ा भी विदेशों को भेजा जाता है।

रुई के अलावा और बहुत-से पदार्थों से कपड़ा बनाया जाता है। रेशमी कपड़ा किस प्रकार बनता है, किस पदार्थ से बनता है ?

चित्र देखो। इसमें रेशम का कीड़ा (कोकोन) दिखाया गया है। रेशम के कीड़े के अन्य स्तर और



अवस्थाएँ भी दिखाई गई हैं। इन्हें तुम देख सकते हो। इन्हें रेशम का कीड़ा (कोकोन) बनाता है। इससे रेशम तैयार होता है। पता लगाने की कोशिश करो कि (कोकोन) से रेशम के धागे किस प्रकार बनाए जाते हैं।

नाइलोन, टेरेलीन आदि धागे भी देखे होंगे। क्या तुम जानते हो कि यह किस प्रकार तैयार किए जाते हैं? मनुष्य ने इन धागों का निर्माण किया है। ये मनुष्य के द्वारा बनाए गए **कृत्रिम धागे** कहलाते हैं। गर्मियों में क्या नाइलोन के कपड़े पहनना सुविधा-जनक है? तुम गर्मियों में किस प्रकार के वस्त्र पहनना पसंद करोगे? किस प्रकार के कपड़े पानी को ज्यादा सोखते हैं?

आओ इसका पता लगाएँ

सूती और नाइलोन के कपड़ों का एक-एक टुकड़ा लो। एक कटोरी में पानी लो। सूती कपड़े का एक सिरा इसमें डुबाओ। अब नाइलोन के कपड़े का एक सिरा इसमें डुबाओ। देखो, दोनों में से कौन अधिक पानी को सोखता है। क्या अब तुम बता सकते हो कि गर्मियों में सूती कपड़े पहनना क्यों सुविधाजनक है?

जो कुछ भी तुम पहनो वह साफ़-सुथरा होना चाहिए। अपने द्वारा इस्तेमाल किए जाने वाले कपड़ों की देख-रेख अच्छी तरह करनी चाहिए। कपड़ों पर कभी-कभी धब्बे



पड़ जाते हैं। इन धब्बों को किस प्रकार दूर किया जाता है? विभिन्न प्रकार के धब्बों को विभिन्न प्रकार से दूर करते हैं। स्याही के धब्बों को दूर करने का उत्तम तरीका कौन-सा है?

आओ इसका पता लगाएँ

सूती कपड़े के तीन टुकड़े लो। तीनों में एक-एक बूँद स्याही लगाओ। धब्बा सूखने के बाद एक कपड़े को ठंडे पानी में धोओ। दूसरे को गर्म पानी में और तीसरे कपड़े पर जहाँ

धब्बा लगा है वहाँ पर थोड़ा-सा नींबू का रस निचोड़ो और उसके ऊपर थोड़ा-सा सादा नमक डालो। कुछ देर तक इसको यूँही धूप में छोड़ दो।



कुछ समय बाद देखो धब्बे पर क्या प्रभाव पड़ा है? अब इसे पानी में धोओ। इनकी परस्पर तुलना करो। किस कपड़े पर से धब्बा हट गया। धब्बों को दूर करने के और कौन-कौन से तरीके हैं? विभिन्न स्याही के धब्बों को दूर करने के लिए विभिन्न प्रकार की वस्तुओं का उपयोग करके धब्बे हटाओ। प्रयोग करके बताओ कौन-सी स्याही का धब्बा आसानी से छूट जाता है और कौन-सी स्याही का धब्बा कठिनाई से।

और कौन-कौन-सी चीजें हैं जिनके धब्बे लग जाते हैं? कभी-कभी तली वस्तुएँ, खाने की कुछ वस्तुएँ आदि सावधानी बरतने पर भी कपड़ों पर गिर जाती हैं और कपड़ों के ऊपर हल्दी और तेल के धब्बे पड़ जाते हैं। अपने माँ-बाप से पूछ-ताछ कर लिखो कि वे हल्दी और तेल के धब्बों को कैसे दूर करते हैं। तुम भी हल्दी और तेल के धब्बों को छुड़ा कर देखो।

बहुत-से धब्बे गर्म पानी और साबुन से धोकर दूर किए जा सकते हैं। लेकिन कुछ धब्बे बड़ी कठिनाई से छूटते हैं। क्या तुम जानते हो कि कोलतार का धब्बा कैसे हटाया जाता है?

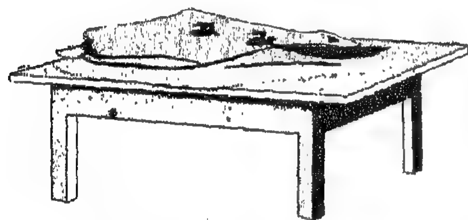
आओ इसका पता लगाएँ

एक पुराना कपड़ा लो। उस पर थोड़ा-सा कोलतार लगा दो। यदि कोलतार लगा कपड़ा मिल जाए तो उत्तम है। साबुन और गर्म पानी से इस धब्बे को हटाने की कोशिश करो। क्या यह हट जाता है? अब धब्बे के ऊपर थोड़ा-सा मिट्टी का तेल डालो और धीरे-धीरे मलो। देखो क्या होता है? क्या तुम जानते हो कि मिट्टी का तेल धब्बे को हटाने में क्यों सहायता करता है? जब धब्बा छूट जाए तब कपड़े को साबुन से धोओ।

कपड़ों को काफी दिन चलाने के

लिए कपड़ों को अच्छी तरह से रखना चाहिए। उपयुक्त ढंग से उनकी देख-भाल करनी चाहिए। ऊनी और रेशमी कपड़ों को तो बहुत अच्छी तरह से रखना चाहिए। यदि कपड़ों को अच्छी तरह से न रखा जाए तब क्या होता है ? कुछ ऐसे कपड़े ढूँढ़ो जिन-को कीड़े ने खा लिया हो। कुछ कीड़ा लगे कपड़े इकट्ठा करो। कीड़े कपड़ों को किस प्रकार बर्बाद कर देते हैं ?

आओ कुछ पर विचार करें



चित्र में कीड़े के जीवनचक्र की कुछ बातें दिखाई गई हैं। छोटा कीड़ा जो अंडे से निकल कर आता है कपड़ों को खा लेता है। जो कीड़ा बन चुकता है वह खा नहीं सकता। यह तो वह छोटा कीड़ा ही है जो कपड़े को काट कर बर्बाद कर देता है। हम अपने कपड़ों की देखभाल कैसे करते हैं ?

क्या तुमने कभी ध्यान दिया है कि तुम्हारे माता-पिता जब कपड़ों को सँभाल कर रखते हैं तब उस बक्स आदि में सूखी नीम की पत्तियाँ या फिनायल की गोली डाल देते हैं। उनसे कीड़ा नहीं लगता। जिस बक्स में तुम कपड़े रखो वह बक्स सूखा होना चाहिए और खूब साफ़-सुथरा। नमी से कपड़े खराब हो जाते हैं। गर्म कपड़ों को रखने से पहले धूप में जरूर सुखाना चाहिए। लेकिन यह ध्यान रखना चाहिए कि इनको सीधी धूप नहीं लगे। यूँही सीधे धूप में डाल देने से कपड़ों का रंग उड़ सकता है।

कपड़ों को धोना चाहिए। उन्हें साफ़-सुथरा रखना चाहिए। कपड़ों को धोने के लिए कौन-कौन-सा पदार्थ काम आता है।

आओ इसका पता लगाएँ

कपड़े धोने के काम आने वाले पदार्थों के बारे में जानकारी इकट्ठी करो। जानकारी के अलावा जितने पदार्थ तुम इकट्ठे कर सको, इकट्ठे करो। इनमें कपड़ों के धोने का साबुन, पाउडर, रीठा आदि हो सकते हैं। इनमें से प्रत्येक पदार्थ को पानी में घोलो। इस घोल में सूती, रेशमी, ऊनी, टेरेलीन आदि के गंदे कपड़ों को डुबाओ। कौन-से पदार्थों से कौन-सा



कपड़ा अच्छा धुल जाता है। क्या एक ही पदार्थ सभी कपड़ों को अच्छी तरह धो देता है ?

धोने के बाद कपड़ों को अच्छी तरह सुखाना चाहिए। कपड़ों को सुखाना क्यों जरूरी है ? किसी कपड़े को भिगोकर अपनी कक्षा के कमरे के एक कोने में रखो। देखो यह सूखने न पाए। कुछ दिन बाद फिर देखो। क्या तुम्हें इस पर काले-काले धब्बे से दिखाई देते हैं ? कपड़े के टुकड़े को सूँघो। क्या तुम्हें इसमें कोई गन्ध आती है ?

भीगे हुए कपड़े को जब बहुत दिन के लिए यूँ ही छोड़ देते हैं तो इनके ऊपर फफूँद-सी आ जाती है।



कपड़ों को हमेशा सुखा कर रखना बहुत जरूरी है। भीगे कपड़ों को सुखाना क्यों चाहिए ?

अपने माता-पिता से पूछो कि धोकर वे कपड़ों को फैलाते क्यों हैं ? क्या होता है जब किसी रंगीन कपड़े को धोकर और दूसरे कपड़ों में मिलाकर उस ढेर में रख देते हैं। क्या इससे दूसरे कपड़ों के रंग पर कोई प्रभाव पड़ता है ?

साफ़-सुथरे कपड़े पहनने में भी अच्छे लगते हैं। कपड़ों के ऊपर इस्त्री (लोहा) करने से और भी अच्छे लगने लगते हैं। कौन-कौन-से तरीकों से कपड़े प्रेस किए जाते हैं। कपड़ों को धोकर प्रेस (इस्त्री) करना क्यों अच्छा है ?

सभी प्रकार के कपड़े साबुन, रीठा और पानी से नहीं धोए जाते।

क्या तुम अपने गर्म/ऊनी कपड़ों को घर पर धोते हो? इन्हें किस प्रकार धुलवाते हैं। ऊनी कपड़ों को धोने के लिए पेट्रोल क्यों इस्तेमाल किया जाता है ?

विभिन्न ऋतुओं में विभिन्न प्रकार के कपड़े पहने जाते हैं। कपड़े हमेशा साफ़-सुथरे होने चाहिए और उनकी देखभाल अच्छी तरह करनी चाहिए। कपड़े बहुत दिन तक चलते रहें इसलिए उनकी देखभाल बहुत अच्छी तरह करो।

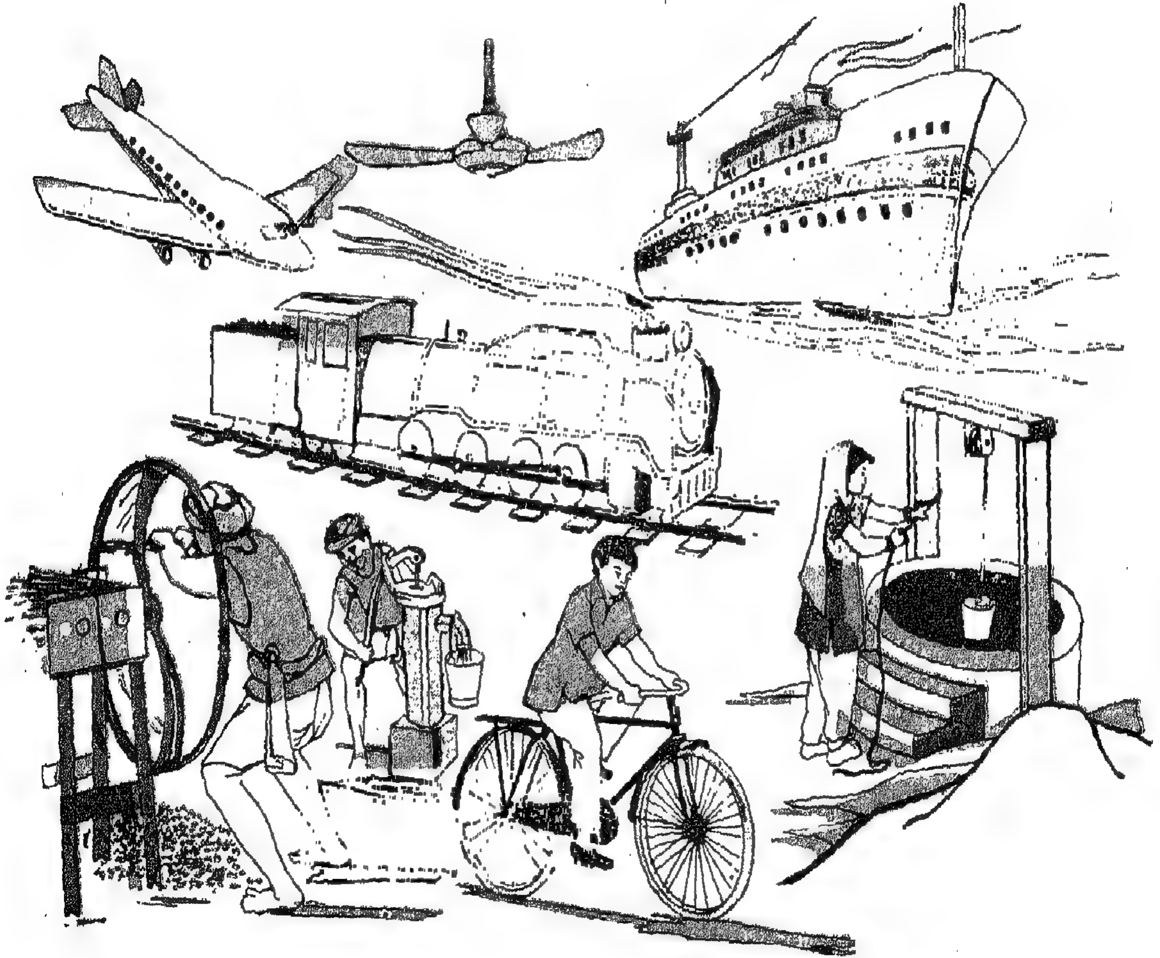
कुछ और भी करो

(1) यदि तुम्हारे आसपास कपड़ा बनाने की कोई मिल या फैक्टरी है तो अपने अध्यापक महोदय से प्रार्थना करो कि वे तुम्हें उस मिल में ले जाएँ। वहाँ जाकर कपड़ा बनाने की पूरी प्रक्रिया देखो।

(2) विविध प्रकार के ऊनी, रेशमी, टेरेलीन वस्त्रों के बुनने आदि से संबंधित जितनी बातें एकत्रित कर सको, करो।

अध्याय 7

ऊर्जा नहीं—कार्य नहीं



बिना ऊर्जा के क्या हम कार्य कर सकते हैं ? क्या कोई ऐसी वस्तु है जो बिना ऊर्जा के कार्य कर सकती है ?

आओ इसका पता लगाएं

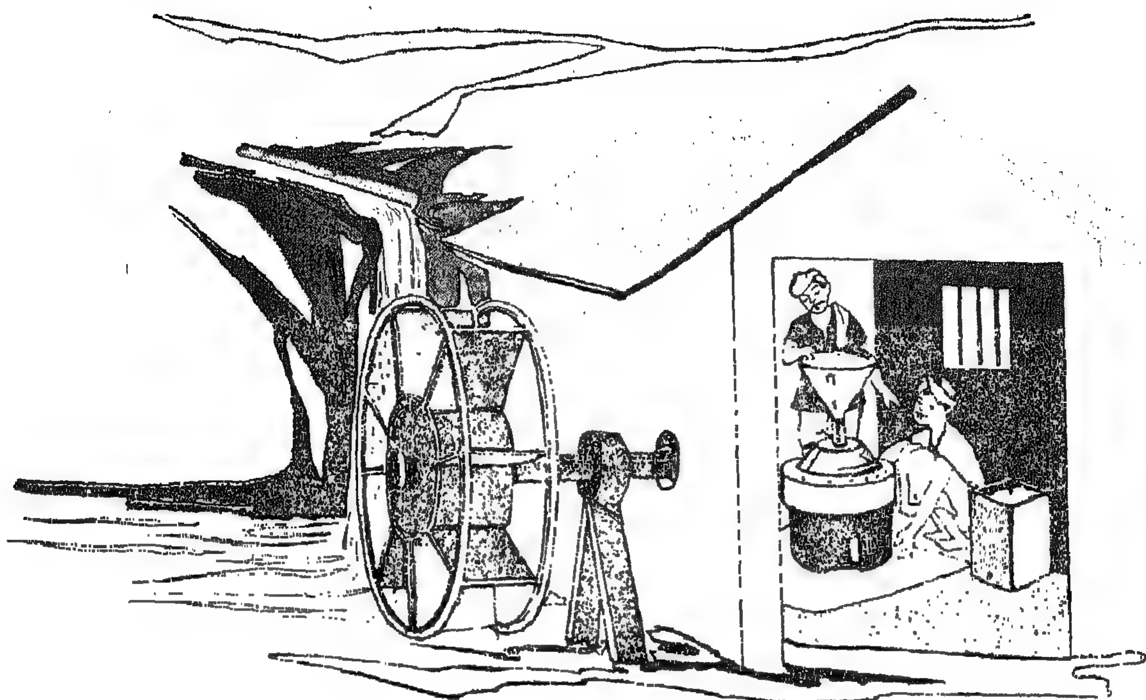
स्कूल के बाहर चलो। चलती हुई साइकिल, कार, ट्रक आदि को

देखो। अनेक आदमी अनेक काम करते हुए दिखाई देते हैं। पृष्ठ 67 पर दिए चित्र को ध्यानपूर्वक देखो। पानी का जहाज चलता हुआ प्रतीत होता है, हवाई जहाज उड़ रहा है। इसके अलावा और क्या-क्या कार्यरत दशा में देखते हो।

विभिन्न प्रकार की वस्तुएँ विभिन्न प्रकार के स्रोतों से ऊर्जा प्राप्त करती हैं। उदाहरण के लिए टार्च को विद्युत ऊर्जा सैल से मिलती है। नीचे कुछ वस्तुएँ तथा उनके ऊर्जा के स्रोत दिए हुए हैं। कौन-से स्रोत से किस वस्तु को ऊर्जा मिलती है, बताओ ?

पुरुष	टार्च
स्त्री	रेडियो
बच्चे	पवन मिल
पशु	ट्रांजिस्टर
घड़ी	विद्युत्व
बैलगाड़ी	चुम्बकत्व
बाईसिकल (साइकिल)	माँसपेशियाँ
मोटर कार, ट्रक, बस आदि	भोजन
हवाई जहाज	चलती हुई हवा (पवन)
बिजली का पंखा	गतिशील पानी
टयूबवैल	बारूद (गनपाउडर)
आटा पीसने वाली मशीन	बैटरी सैल
रेल इंजन	

कार्य करने के लिए हम किस बल का उपयोग करते हैं। वस्तु पर बल लगाने से वस्तु अपनी जगह से हट सकती है और नहीं भी। बल लगाने पर जब वस्तु विस्थापित हो जाती है तब हम कहते हैं कि कार्य हुआ। यदि वस्तु में विस्थापन नहीं होता तब कहते हैं कार्य नहीं हुआ। बल कौन लगा



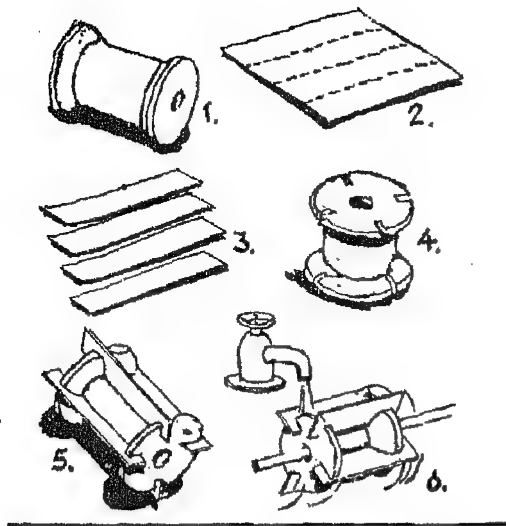
सकता है ?

आओ इस पर विचार करें

जिस किसी में भी ऊर्जा होती है वह बल लगा सकता है। हम लोगों में ऊर्जा है इसलिए हम तरह-तरह के कार्य कर पाते हैं। लेकिन हमारी ऊर्जा का स्रोत क्या है ? हमें ऊर्जा मिलती कहाँ से है ? क्या तुम्हें पेशीय बल के बारे में कुछ याद है ? तुम यह कैसे कह सकते हो कि किसी वस्तु को उठाने में पेशीय बल लगता है ? यदि माँस-पेशियाँ ऊर्जा का स्रोत हैं तो माँस-पेशियों में ऊर्जा कहाँ से आती है ?

क्या तुमने कोई पवन मिल देखा है। एक पवन मिल चित्र में दिखाया गया है। पनचक्कियों के पाटों को गिरता हुआ पानी घुमाता है। इन घूमते हुए पहियों से विद्युत ऊर्जा भी प्राप्त की जा सकती है। घूमते हुए पहियों को कार्य करने के लिए ऊर्जा कहाँ से मिलती है ?

एक जलचक्र लो। यदि बना हुआ कोई जलचक्र न मिले तो बड़ी आसानी से बना सकते हो। यह जलचक्र किस प्रकार घूमता है, इसका अध्ययन करने के लिए इसे अपने मित्र को पकड़ाओ।



एक बाल्टी में पानी लो। बताओ, बाल्टी के इस पानी में क्या कार्य करने की योग्यता है ? क्या यह बाल्टी का पानी कुछ कार्य कर सकता है ? जल-चक्र की पत्तियों पर पानी की धारा डालो। जलचक्र के पहियों को क्या होता है ? गतिशील पहियों की ऊर्जा का स्रोत क्या है। तुम कह सकते हो, पानी। लेकिन कैसा पानी ? स्थिर अथवा गतिशील ?

तुमने शायद देखा होगा कि नदियों, नहरों आदि में लकड़ी के बड़े-बड़े लट्ठे, तख्ते बहते चले जाते हैं। इन लकड़ी के लट्ठों, तख्तों आदि को कौन बहाकर ले जाता है। बहते हुए पानी में कार्य करने की योग्यता होती है।

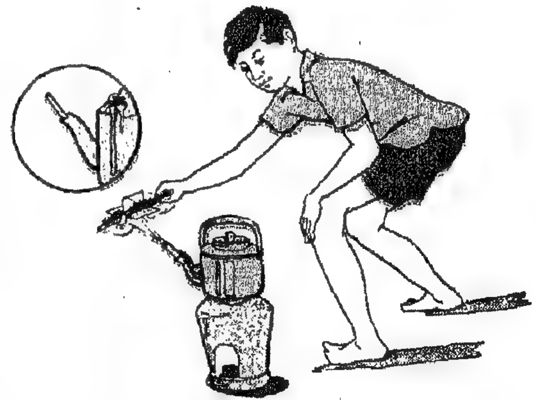
क्या चलती हुई हवा (पवन) बल लगाती है ? क्या इसमें ऊर्जा होती है ? यह हम कैसे जानते हैं ?

आओ इसका पता लगाएँ

अपने मुँह के सामने जलचक्र पकड़ो। जलचक्र की पत्तियों पर जोर से फूँक मारो। अपने मित्र से जलचक्र की पत्तियों को पकड़ने के लिए कहो। जलचक्र की पत्तियों का क्या होता है ? जलचक्र की पत्तियों को घुमाने के लिए ऊर्जा कहाँ से आती है ? इनके अलावा ऊर्जा के और कौन-कौन से स्रोत हैं ?

आओ इसका पता लगाएँ

पानी की केतली के मुँह में एक पतली नली लगाओ। इसमें पानी भर-



कर खोलो। भाप को जलचक्र की पत्तियों पर डालो। जलचक्र की पत्तियों का क्या होता है ? कौन बल लगाता है ? लेकिन भाप में ऊर्जा कहाँ से आती है ? भाप उबलते हुए

पानी से प्राप्त होती है। पानी को कौन उबालता है ? पानी को उबालने के लिए तुम कोयला, लकड़ी, मिट्टी का तेल भी इस्तेमाल कर सकते हो। ये भी उष्मा के स्रोत हैं। बाहर चलो और पता लगाओ कि कार्य करने के लिए उष्मा कहाँ-कहाँ काम में आती है। उष्मा का क्या कोई और स्रोत भी है ? जब हम अपने हाथों को परस्पर तेजी से रगड़ते हैं, तब क्या होता है ?

आओ इसका पता लगाएँ

अपने दोनों हाथों को परस्पर खूब रगड़ो। तुम्हें कैसा महसूस होता है ? हाथों को रगड़ने में हम कुछ



कार्य करते हैं। हमारे हाथों की ऊर्जा उष्मीय ऊर्जा में बदल जाती है। हाथ गर्म हो जाते हैं। क्या कार्य करने पर उष्मा उत्पन्न होती है।

आओ इसका पता लगाएँ

दो पत्थर के टुकड़े लो। दोनों टुकड़ों को खूब रगड़ो। रगड़ी हुई सतहों को छुओ। कैसा महसूस होता है ? क्या तुमने एक पत्थर से दूसरे

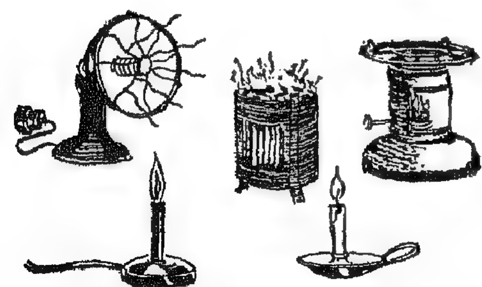


पत्थर को टकरा कर ऊष्मा पैदा की है ? क्या तुमने कुछ कामगीरों को छुरी, काँटा, चाकू, कैंची आदि को एक घूमते हुए पहिये की सहायता से उन पर धार बनाते हुए देखा है। छुरी, कैंची आदि की धार बनाते समय चिन-

गारियाँ उत्पन्न होती देखी हैं ? यह चिनगारियाँ कहाँ से आती हैं ?

तुमने शायद देखा होगा कि जब पक्की सड़क पर इक्का, ताँगा तेजी से चल रहा होता है, तो कभी-कभी घोड़े के नाल से चिनगारियाँ उत्पन्न होती दिखाई देती हैं। कुछ दूर चलने के बाद बैलगाड़ी, मोटर अथवा कोई और मशीन, जो कार्य करने के बाद रुकी हो, के भागों को छुओ। ऐसी मशीन के कौन-कौन से हिस्से ज्यादा गर्म हो जाते हैं।

मनुष्य का जीवन ऊष्मा पर आधारित है। ऊष्मीय ऊर्जा का प्रयोग खाना बनाने, इंजनों के लिए भाप पैदा करने, धातुओं आदि को पिघलाने के काम आता है। इसके अलावा ऊष्मा



के और कौन-कौन से उपयोग हैं। ऊर्जा के इन स्रोतों के अलावा और कौन-कौन से स्रोत हैं।

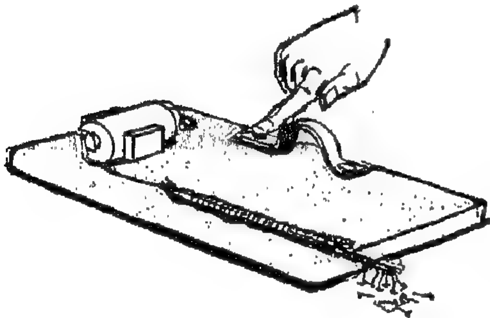
बिजली के पंखे को कौन घुमाता है ? बिजली के मोटरों को कौन चलाता है ? बिजली के नलकूपों को कौन चलाता है। रेडियो को कौन कार्य कराता है। टार्च को कौन प्रकाशित करता है ? टार्च के प्रकाश की ऊर्जा कहाँ से आती है। विद्युत से बहुत-से कार्य होते हैं। बिजली का हीटर भी इसी से गर्म होता है। हीटर की विद्युत ऊर्जा, ऊष्मीय ऊर्जा में बदल जाती है।

विद्युत, ऊर्जा का एक बहुत महत्त्वपूर्ण स्रोत है। विद्युत ऊर्जा अनेक प्रकार से उपयोगी है। ट्यूबवैल भी इसी से चलता है। घरों में प्रकाश भी इसी से होता है। घरों को गर्म और ठंडा भी इसी से रखते हैं। फैक्टरियों, मिलों में मशीनें भी इसी से चलती हैं। विद्युत घरों में भी काम आती है और फैक्टरियों में भी। फैक्टरी अथवा मिल में जो विद्युत इस्तेमाल होती है वह बहुत अधिक वोल्टेज की होती है। विद्युत के तारों और खंभों को छूना नहीं चाहिए। हमें विद्युत के तारों व खंभों से दूर रहना चाहिए।

विद्युत ऊर्जा के उपयोग से क्या हम चुंबक बना सकते हैं ?

आओ इसका पता लगाएँ

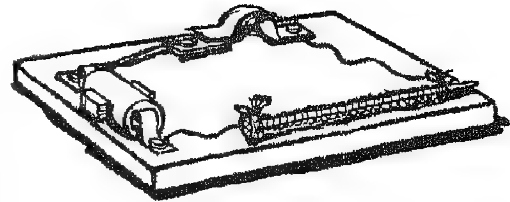
लोहे की एक बड़ी कील लो। कुछ ताँबे का तार भी लो। ब्लेड, चाकू अथवा रेगमार की सहायता से इस तार के सिरों को साफ़ करो। कील के ऊपर लगभग 50 लपेट लगाओ। इस कील के पास लोहे की



छोटी-छोटी कीलें लाओ। देखो क्या होता है। अब तार के सिरों को बैटरी सैल से जोड़ो। अब फिर लोहे की बड़ी कील के पास छोटी-छोटी कीलें लाओ। देखो क्या होता है।

अब तार के सिरों को सैल से अलग करो। देखो लोहे की छोटी-छोटी कीलों का क्या होता है।

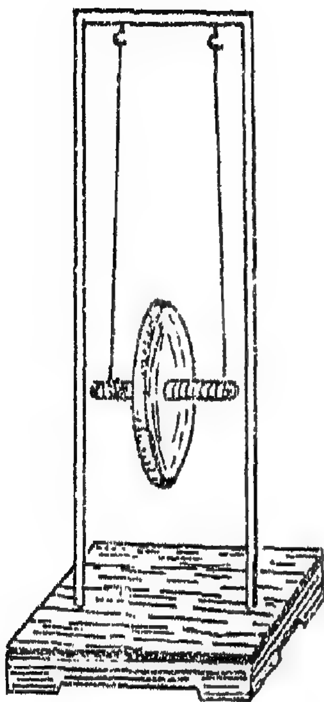
बड़ी लोहे की कील में छोटी-छोटी कीलों को उठाने के लिए ऊर्जा कहाँ से आती है। विद्युत धारा की



वजह से लोहे की कील चुंबक बन जाती है। इसका स्रोत विद्युत है। यह लोहे की बड़ी कील को ऊर्जा प्रदान करती है। इस प्रकार का बना हुआ चुंबक विद्युत चुंबक कहलाता है। घर में अपने पास-पड़ौस और स्कूल में विद्युत चुंबक के उपयोगों के बारे में पता लगाओ। पता करो यह कहाँ-कहाँ इस्तेमाल होता है ? मैगनेटिक क्रेनों में भी विद्युत चुंबक होता है। क्रेन का इस्तेमाल भारी बोझ उठाने में किया जाता है।

कुछ और भी करो

(1) जैसे चित्र में दिखाया है, वैसा आयोजन करो। यह एक चकती है। इस चकती के बीचों-बीच एक छड़ जुड़ी है। छड़ के दोनों सिरों पर धागा बाँधो। दोनों धागों को ऊपर के चौखटे की छड़ से बाँधो। चकती को ऊपर की ओर करते हुए धागे को लपेटते हुए ऊपर तक उसे उठाओ। उठाने



के बाद छोड़ो। देखो क्या होता है ? इस चकती को ऊपर-नीचे कौन करता है ? सोचो और उत्तर देने की कोशिश करो।

(2) बाजार में चलो। किसी दुकानदार से प्रार्थना करो कि वे तुम्हें वह तरीका बताएँ जिससे वे टार्च के सैल और बल्बों की जाँच करते हैं। इस विधि को लिखो।

(3) कुछ ऐसे खिलौने इकट्ठे करो जो कमानी के लपेटने से कार्य करते हो। ऐसे खिलौनों में ऊर्जा का स्रोत क्या होता है ? वे किस प्रकार कार्य करते हैं। उनकी कार्य-विधि देखो और लिखो।

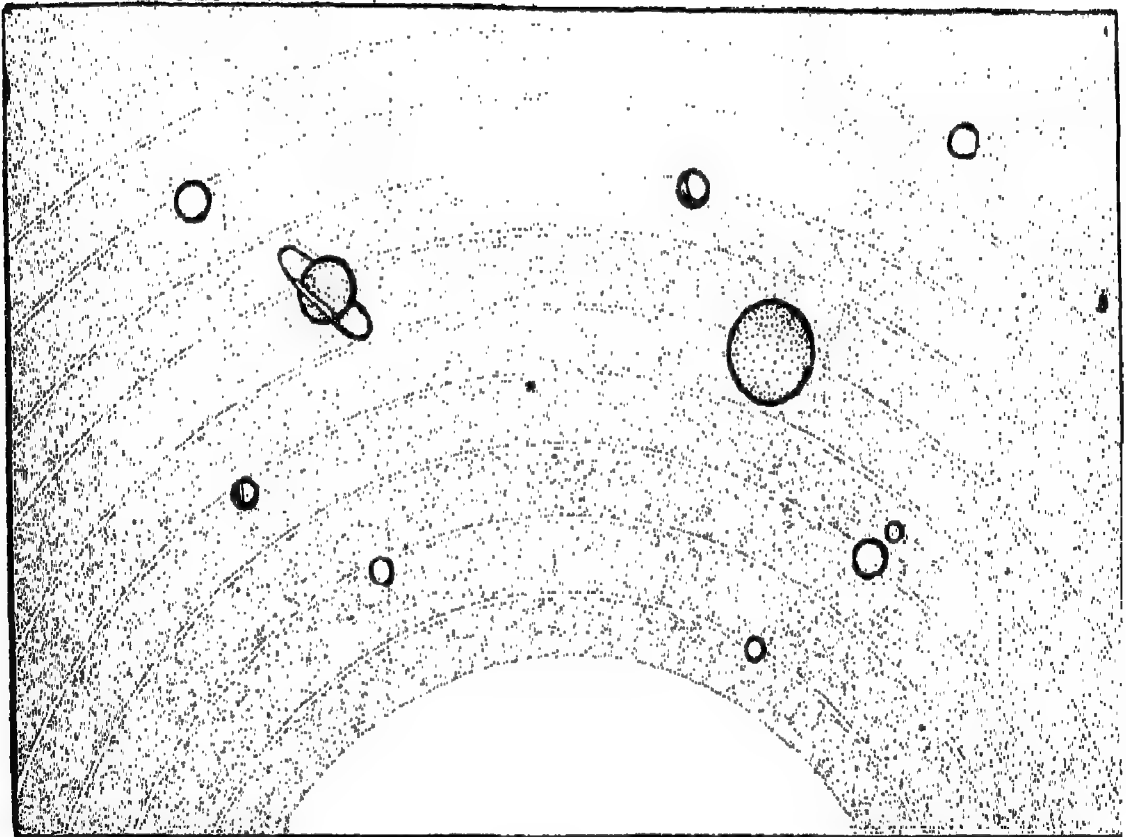
(4) कलाई की घड़ी कैसे कार्य करती है। देखो इसमें ऊर्जा का स्रोत क्या है ?

(5) ऊष्मीय ऊर्जा के पाँच स्रोत बताओ। प्रत्येक स्रोत के ऊपर दो-दो वाक्य लिखो।

(6) 'ऊष्मा' अनेक कार्यकलापों में इस्तेमाल होती है। कम-से-कम दस कार्यकलाप बताओ।

अध्याय 8

पृथ्वी—एक ग्रह



हमारी पृथ्वी सूर्य परिवार की सदस्य है। चित्र देखो। सूर्य कहाँ है ? सूर्य के अलावा परिवार के और कितने सदस्य हैं। यह सदस्य **ग्रह** कहलाते हैं। हमारी पृथ्वी इनमें से एक ग्रह है।

चित्र में पृथ्वी की स्थिति बताओ। पृथ्वी और सूर्य के बीच में बताओ कितने ग्रह हैं।

क्या तुमने कोई ग्रह देखा है ? उसका नाम बताओ। वास्तव में हमारी

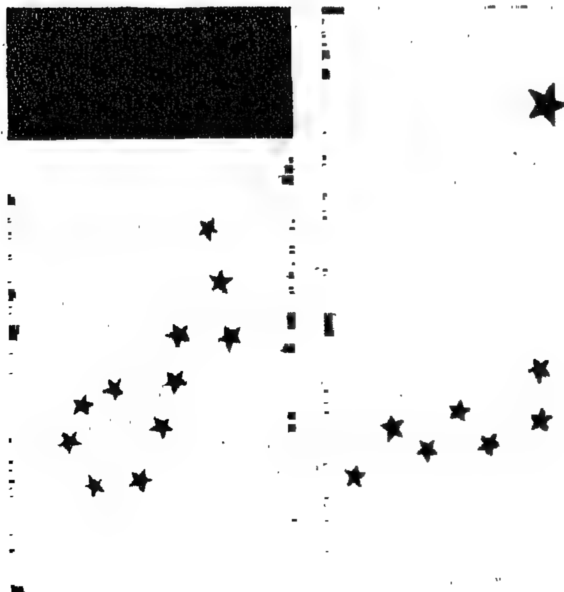
पृथ्वी एक ग्रह है। क्या कोई दूसरा ग्रह भी देखा है ? इसके दिखने की संभावना कहाँ है ?

आओ इस पर विचार करें

रात को आकाश में हमें तारे दिखाई देते हैं। क्या तुमने रात को ध्यानपूर्वक आकाश देखा है ? तुमने देखा होगा कि तारे समूहों में दिखाई देते हैं। इन समूहों से कुछ आकृतियाँ बनी-सी नजर आती हैं। आकाश में ऐसा क्या कोई समूह देखा है ? तुमने सप्तऋषि, कालपुरुष देखा होगा। चित्र को ध्यानपूर्वक देखो। चित्र से पता लगाओ, कैसी आकृति नजर आती है।

आकाश में ऐसे समूह अपनी स्थिति बदलते नजर आते हैं। लेकिन उनके समूह की आकृति हमेशा एक ही रहती है। समूह में परिवर्तन नहीं होता। पूरे समूह की स्थिति बदलती है। तारों के अलावा क्या कुछ और चीजें भी नजर आती हैं ?

किसी रात को आकाश को अच्छी तरह देखो। तारे पूर्व से पश्चिम की ओर चलते दिखाई देते हैं। सूर्य भी पूर्व से पश्चिम की ओर चलता दिखाई देता है। ध्यानपूर्वक देखने पर कभी-कभी यह दिखाई देता है कि तारों की तरह की कुछ और वस्तुएँ तारों की चलने की विपरीत दिशा में चलती







नजर आती हैं। ये तारों के पीछे से या तारों में से चलती नजर आती हैं। आकाश में इस प्रकार घूमनेवाले पिंडों को ग्रह कहते हैं। इनकी संख्या नौ है।

आँख द्वारा पाँच ग्रह सरलता से दिखाई दे जाते हैं। उनके नाम हैं– बुध, शुक्र, मंगल, वृहस्पति और शनि।

इन नामों में तथा सप्ताह के नामों में कुछ संबंध दृष्टिगोचर होता है।

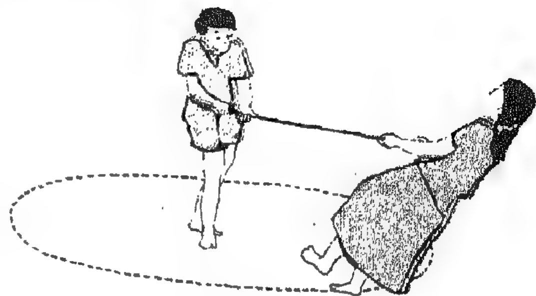
शुक्र एक चमकीला ग्रह है। यह सूर्योदय के पूर्व या सूर्योदय के बाद दिखाई देता है। इसे देखने की कोशिश करो। इसके दिखाई देने की दिशा भी लिखो। साधारणतः कुछ लोग इसे सुबह का तारा या शाम का तारा भी कहते हैं।

ग्रह सूर्य के चारों ओर लगभग वृत्ताकार मार्गों में परिक्रमा करते हैं।

ग्रह परिक्रमा किस प्रकार करते है ?

आओ इसका पता लगाएँ

मैदान में चलो। अपने मित्र को एक जगह खड़ा करो। उसका नाम सूर्य रखो। तुम अपने मित्र को रस्सी का एक सिरा पकड़ाओ और दूसरे सिरे को तुम पकड़ो। रस्सी को खींचते हुए अपने मित्र के चारों ओर घूमो। जैसे-जैसे तुम घूमो वैसे-वैसे ही अपने मित्र को कहो कि वह भी तुम्हारी ओर

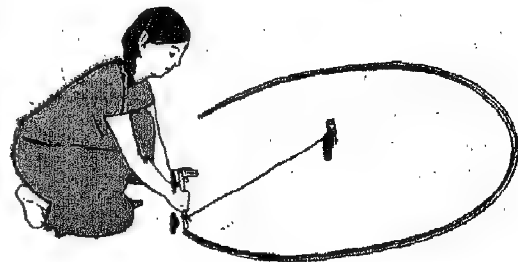


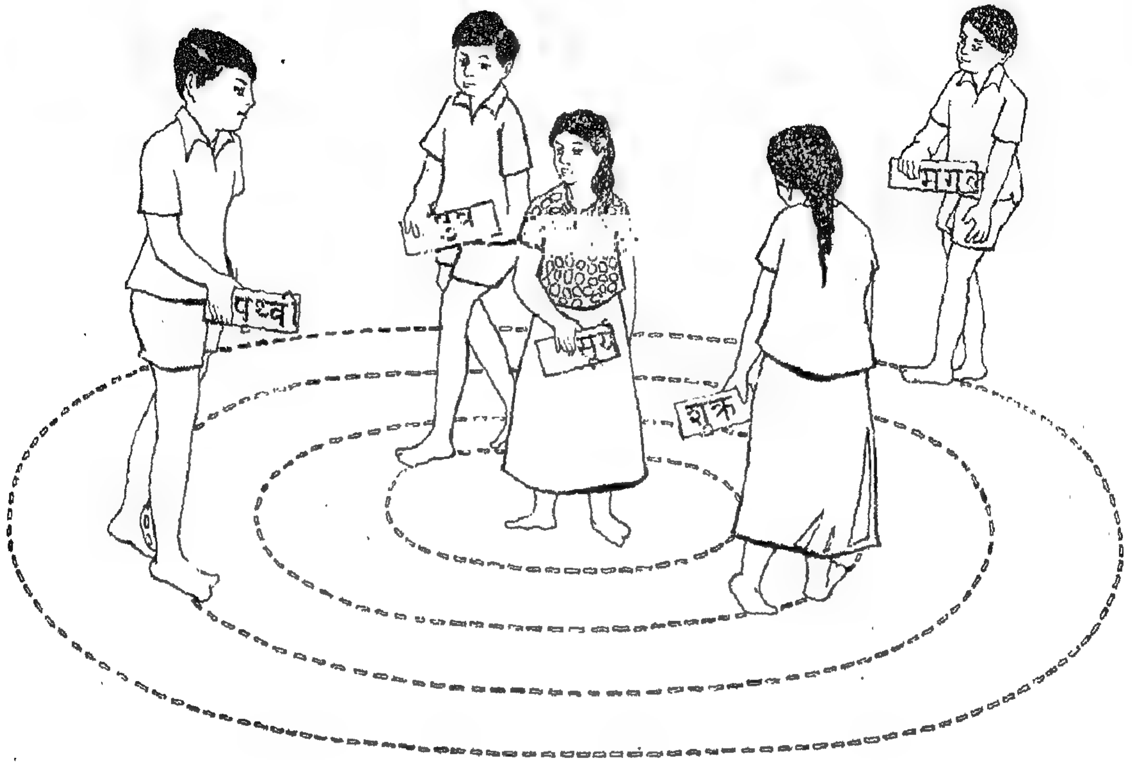
घूमता जाए। यदि वह सूर्य है तो तुम एक ग्रह हो। यदि तुम सूर्य के सबसे पास वाले ग्रह हो तो, बताओ, उस स्थिति में तुम्हारा नाम क्या होगा ?

सभी ग्रह सूर्य की परिक्रमा करते हैं। फिर भी यह कैसे होता है कि यह आपस में एक-दूसरे से टकराते नहीं हैं।

आओ इसका पता लगाएँ

मैदान में चलो। एक खूंटी गाड़ो। एक रस्सी लो। रस्सी के एक सिरे को खूँटी में बाँधो और दूसरे





सिरे पर एक छड़ बाँधो। रस्सी को खींचते हुए छड़ की सहायता से एक वृत खींचो। अब रस्सी को थोड़ा छोटा करो और एक वृत खींचो।

रस्सी को और छोटा करो और एक और वृत खींचो। इस प्रकार कई वृत खींचो। अपने मित्रों के नाम बुध, शुक्र, पृथ्वी और मंगल रखो। अपने आपको सूर्य मानो। तुम स्वयं केन्द्र में खड़े हो जाओ। अपने बाद बुध को खड़ा होने दो, उसके बाद शुक्र, फिर पृथ्वी, और फिर मंगल। अपने मित्रों से कहो कि वह अपने-अपने रास्ते पर चलते रहें। क्या यह आपस में टकराते हैं। ध्यान दो, हर ग्रह का अपना-अपना मार्ग है।

जिस प्रकार तुम्हारे मित्र तुम्हारे चारों ओर परिक्रमा करते हैं उसी तरह से ये ग्रह सूर्य की परिक्रमा करते हैं।

पृथ्वी सूर्य के चारों ओर परिक्रमा करती है। यह अपने अक्ष पर घूमती भी है। पृथ्वी 24 घंटे में अपने अक्ष पर एक पूरा चक्कर लगाती है। गणना

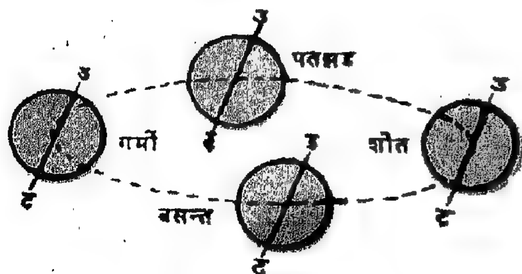
करो कि एक चक्कर में कितने सेकिन्ड होते हैं।

क्या तुम्हें याद है कि तुमने दिन और रात के बनने को समझने के लिए पिछली कक्षा में कुछ कार्यकलाप किए थे। दिन के बाद रात और रात के बाद दिन आता है। ऐसा पृथ्वी का अपने अक्ष पर घूमने के कारण होता है।

दिन कब बड़े होते हैं और कब छोटे ? किन-किन महीनों में गर्मियाँ होती हैं और किन-किन महीनों में जाड़ा।

जिन महीनों में गर्मी की ऋतु होती है, उन्हीं महीनों में फिर क्यों गर्मी की ऋतु आती है। ऐसा ही जाड़े की ऋतु के लिए है। जिन महीनों में जाड़े की ऋतु होती है, उन्हीं महीनों में लौटकर फिर जाड़े की ऋतु आती है। ऐसा क्यों ?

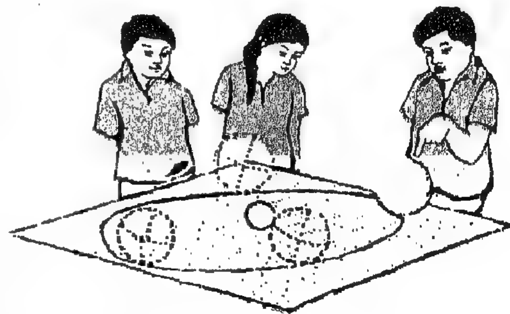
ऐसा इसलिए होता है कि पृथ्वी



सूर्य के चारों ओर एक वर्ष में एक परिक्रमा पूरी करती है। एक साल में बारह महीने होते हैं। प्रत्येक वर्ष इन्हीं महीनों में पृथ्वी सूर्य के सापेक्ष अपनी पुरानी स्थिति में आ जाती है। चित्र को ध्यानपूर्वक देखो। पृथ्वी अपने अक्ष पर झुकी हुई है और हमेशा एक ही दिशा में रहती है। उत्तरी गोलार्ध में गर्मी की ऋतु तब होती है जब उत्तरी ध्रुव सूर्य की ओर झुका होता है। जब यह सूर्य से दूर होता है तब उत्तरी गोलार्ध में जाड़ा होता है। ऐसा कैसे होता है ?

आओ करके पता लगाएँ

एक ग्लोब और एक बड़ी गेंद लो। मेज पर एक वृत खींचो। गेंद को केन्द्र में रखो। मानो यह सूर्य है।



ग्लोब को अलग-अलग स्थितियों में रखो। अपने प्रेक्षणों को लिखो। किन स्थितियों में गर्मी की ऋतु होती

है और किन स्थितियों में जाड़ा।

पृथ्वी में गर्मी की ऋतु भी होती है और जाड़ा भी लेकिन अलग-अलग जगहों पर।

ऋतुओं से हमारे कार्यकलाप और वस्त्र किस प्रकार प्रभावित होते हैं। अलग-अलग ऋतुओं में होने वाले कार्यकलापों को लिखो।

कुछ और भी करो

(1) रात में सप्तऋषि और कालपुरुष देखने की कोशिश करो। अपने माता-पिता तथा अध्यापक महोदय से प्रार्थना करो कि वे तुम्हें सप्तऋषि और कालपुरुष की पहचान करने में सहायता करें।

(2) ग्रह देखने की कोशिश करो। यदि थोड़ा-सा भी प्रयत्न करो तो शुक्र ग्रह तो अवश्य देख लोगे।

(3) ग्रहों, तारों तथा तारामंडलों के बारे में किताबों, मैग्जीनों, पत्रिकाओं, कहानी की किताबों आदि से जितनी भी जानकारी इकट्ठी कर सको, करो।

(4) निम्नलिखित शब्दों को शब्दकोष में देखो और उनके अर्थ अपने शब्दों में लिखो।
ग्रह, घूर्णन, परिक्रमा, अक्ष, नत, ऋतु।

(5) वृत्ताकार मार्ग खींच कर खेल खेलो कि किस प्रकार नौ ग्रह अपने-अपने मार्ग पर सूर्य के चारों ओर परिक्रमा करते हैं।



PLOUGHING



SOWING



HARROWING



THRESHING

c A.D. 1340

(*Luttrell Psalter*)



FEEDING CHICKENS—*c* A D 1340
(*Luttrell Psalter*)

kitchens, were often arranged in the form of three or four sides of a square (a quadrangle), with the hall in the middle of the principal side, and the gatehouse opposite to it The whole was surrounded by a moat, the entrance protected by a gatehouse with a portcullis and drawbridge; the walls were battlemented. During the disturbed times in the reign of Richard II , and the following Wars of the Roses, every house of importance was fortified against roving bands of robbers At the beginning of the fifteenth century the houses of peasants were hovels of poverty and dirt; the villages were clusters of mud-built huts covered with reeds or straw; the peasants had no second room, the whole family sleeping together on the floor. Their furniture was perhaps a cupboard, a bench, a few wooden platters, and cooking utensils.

CHILDREN'S STORY

During the long years of war how had the ordinary people of England been getting on? Most of them still lived in little villages getting their living by farming the land. In each village were three chief classes of people, the lord of the manor, the freemen and the villeins. At the head was the lord who lived in the Hall or Manor House, then came a few freemen living on their own small farms, and the majority of the villagers were villeins bound to the soil. A villein had a share of the strips into which the three big fields were divided, but he could not work on his strips every day, because he had to give service to the lord for his share in the fields. He was obliged to work on his lord's strips two or three days a week and on extra days at busy seasons such as at times of ploughing, sowing, reaping and haymaking. Most villages consisted of three or four hundred people grouped round the parish church and manor house in the middle of a large open field

Down the village street stretched the cottages of the villeins and the houses of the freemen, each surrounded by a little plot of ground. Some of the cottages were no better than log cabins or hovels, with no chimneys, and often with no windows or other openings than the door. The roof was of turf or thatch. Beyond the open fields lay the open waste, untilled field and marshes, heaths and forests which still covered a great part of the country. Each village was cut off almost entirely from its neighbour and had to make nearly everything it required for itself The carpenter built the cottages, and made the furniture for them, the thatcher finished the roof, and the blacksmith made the rough household utensils and the farm implements our forefathers used. Nearly all clothing was made at home, the yarn was spun and the cloth woven by the women and children Each family baked its own bread with flour ground in the village mill from grain grown on its own land; each brewed its own ale or cider, each family grew its own wool or flax and made its own clothing, tanned its own leather and made it into rough sandals, shoes, jackets or trousers Life in the village was hard, and when the crops failed, as they often did in a wet summer, the village was faced with famine

Social life.—You already know of the importance of the cloth-making business of England, but you must not imagine that



WEEDING



REAPING



TYING UP SHEAVES



CARTING CORN

c A D 1340

(The Class Picture No 49 is based on these illustrations from the *Luttrell Psalter*)

England had yet become a land of great towns with many busy factories Spinning and weaving were carried on in the homes of the villagers Up to the end of the fourteenth century English goods were mostly carried in foreign ships, but by the end of the next century English vessels had more than half of the carrying trade Besides the cloth-making industry, the fighting men kept the harness-makers and the armourers busy London was fast becoming one of the great world ports. Its chief exports were wool, hides, leather, and saddlery, its chief imports, wines, silks, spices, dried fruits, and metals. There was, too, much work connected with building In the reign of Edward I the beautiful *Decorated* style of architecture began to take the place of the Early English The chief feature of the new style is found in the windows in which the tracery, or ornamented stone-work, is arranged principally in circles, quatrefoils and other regular patterns of curved lines The Decorated style prevailed throughout the greater part of the reigns of the first three Edwards. Towards the end of the fourteenth century it was followed by the *Perpendicular* style in which beauty of form was abandoned for the sake of breadth. The name is derived from one of its most striking features, viz the arrangement of the tracery, which consists of perpendicular lines Many rich clothiers gave large sums of money for the building of churches, and, for themselves, they built great country houses.

Roads, generally, were still very bad. Sometimes taxes were levied in certain districts to pay for roads and bridges, but it was usually left to the owner of the land to keep roads in repair, and as this cost a good deal of money the work was often neglected It was not until the eighteenth century that such roads as the Romans made were again constructed in England. Many bridges were built by the clergy, for it was considered an act of piety to make or repair roads and bridges London Bridge, which had been begun in 1176 in the reign of Henry II to replace an old wooden one, was completed in 1209 From time to time large buildings and houses were placed on it, in order that their rents might pay for its upkeep This old London bridge existed until the beginning of the nineteenth century

There were as yet few conveyances on the roads Royalty and very great people sometimes used lumbering carriages gorgeously decorated, but except for those who were obliged to walk, men and women travelled on horseback The roads were not always safe; outlaws and criminals took refuge in the broad tracts of forest land and robbed merchants and wealthy travellers

In the reign of Edward I a law was passed by which every man was bound to hold himself in readiness, properly armed, for the king's service in case of invasion or revolt, and to serve in the Watch, or police force, and to pursue wrong-doers when hue-and-cry was raised after them. The gates of each town were required to be closed at nightfall, and all brushwood where robbers might hide was to be destroyed for a space of two hundred paces, or a bowshot, on either side of the public highway. Knights were appointed in every shire to see that peace was kept These knights were later known as *Justices of the Peace*



Dishonest Baker being Drawn to the Pillory

In the towns, stone and even brick buildings were taking the place of the old timber-framed houses, though brick was still scarce in the middle of the thirteenth century To the old single-roomed houses upper chambers called *solars* were added; these were reached by an outside staircase and were used for bedrooms. In the shops, goods were displayed in a booth outside, and stored by night in the cellar. Richer merchants built *parlours* to their shops, rooms where they could talk business with their customers

In the country, pedlars with their pack-horses took the place of shops and provided the peasants with pretty and useful articles. Pedlars were always welcome, for, in a measure, their gossip took the place of newspapers and letters

Both men and women wore dresses of the brightest colours, and scarcely two men in a street were dressed in the same way, for butchers, bakers, smiths, barbers, etc , wore different dresses according to the kind of work in which they were engaged Glass was becoming common, but chimneys were few, especially where stone was scarce Chimneys did not become common until bricks were cheap The streets were narrow and usually overhung by the timbered houses. There were no footpaths, and the road sloped down on either side to the *kennels* or canals which drained off the rain and filth Up to the fourteenth century pigs wandered in the streets of London, eating the refuse thrown out of the houses

It is little wonder that frequently dreadful sickness broke out. During the reign of Edward III the *Black Death* swept over Europe. This plague came from the East and arrived in England in 1348.

The disease was amazingly swift in its action; victims often died within twenty-four hours; it was a deadly pestilence. The whole land was ravaged, town and country alike. It is estimated that between one-third and one-half of the people died. Death was busy everywhere, among high and low, rich and poor. Whole villages were left without tenants, and frequently the father, mother and children of a family all perished and their cottage fell into ruins. In many places there were not enough men to reap the harvest, which was left to rot in the fields; hedges were broken down, and the sheep and cattle wandered in the cornfields.

When the Death had passed away, the trouble and distress were not at an end, for the lords could not get enough men to work in their fields, and the labourers who were left wanted higher wages for their work, because food was so dear

Many lords then tried other plans for getting money from their lands Instead of growing crops of wheat, oats and barley, they turned their fields into sheep farms, which needed the work of far fewer peasants than the cornlands. The wool from the sheep was sent mainly to Flanders, and England became more and more a wool-producing country Englishmen did not weave such fine cloth as the Flemings During the trouble between the Flemings and their count, Edward III brought over a number of Flemish weavers, and settled many of them in Norfolk, which became a great cloth-making county. That is why we find numbers of very large churches in Norfolk, for the churches were built when the county was much more populous than it is now

As the country began to recover from the effects of the Black Death, the cloth trade became a very flourishing industry

Books.—For over one hundred years after the Normans conquered England there were few books written in English, for the Normans wrote in Latin or French About the end of the twelfth century, an English priest named Layamon translated into English, *The History of the Britons*, which had been written by a Welsh priest named Geoffrey of Monmouth This poem gives us the history of Wales from very early days, and in it we find many stories about the great British King Arthur and the struggle between the Britons and the English



GEOFFREY CHAUCER

From the Ellesmere MS of *The Canterbury Tales*, early 14th century

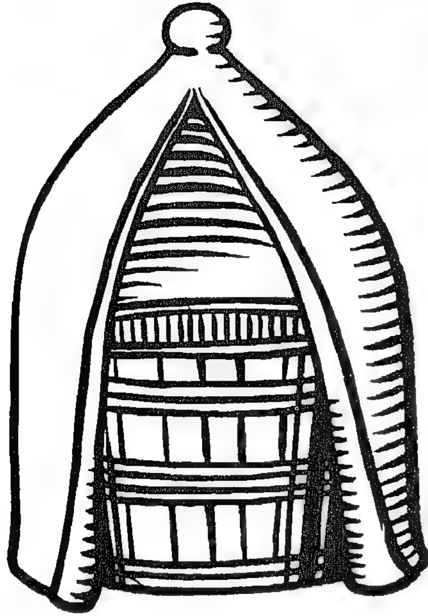
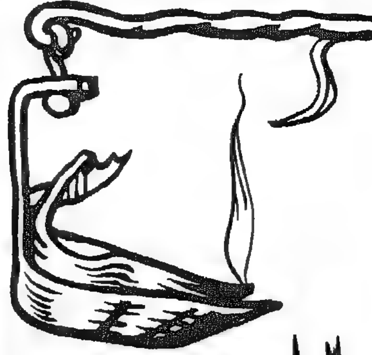
As years went on, more and more books were written in English, for although the descendants of the Normans still spoke French they were becoming more and more English, and so they found it easier to read poems and stories written in the English language In the fourteenth century lived two great poets, Geoffrey Chaucer, who sang of the life of "Merrie England," and William Langland, who sang of the life of the poor and wretched From these two poets we get a good picture of England as it was at that time

Geoffrey Chaucer (c 1340-1400) had had a life full of adventure; he had been a page to a son of King Edward III, a soldier in the Hundred Years' War, an ambassador to France and Italy, and a member of parliament, thus he had mixed with all classes and was able to write stories about all kinds of people. His great poem is called *The Canterbury Tales* It was the custom in those days for people to go on a pilgrimage to the shrine of one of the English saints The people of London usually went to Canterbury to visit the shrine of St Thomas, the archbishop Becket, who had been murdered in the reign of Henry II.

Chaucer tells us that twenty-nine pilgrims met at the Tabard Inn in Southwark, ready to start on their pilgrimage. Before they set out, the landlord of the inn proposed that they should tell stories on their way, and that on their return the one who had told the best tale should have a feast at the expense of the others

In the prologue, or foreword, Chaucer describes the pilgrims—the Knight, who was a very gentle, perfect knight; the Squire, his son, who was lowly and serviceable, the Yeoman, who was clad in coat and hood of green, and bore a sheaf of arrows bright and keen under his belt, and in his hand a mighty bow, the Prioress, a nun who was so tender-hearted that she would weep if she saw a mouse caught in a trap; a Monk, who loved riding and a merry life, a Friar, who travelled round the country preaching and begging; a Merchant, well-to-do and wise in dealing; a Clerk of Oxford, lean and threadbare, a Cook, who could roast and seethe and broil and fry, a Shipman, whose beard in many a tempest had been shaken, a Wife of Bath, who was famous for her cloth-making, a Poor Parson, who was rich in holy thought and work; a Miller, famous for his strength, who could break any door by running against it with his head—and other pilgrims besides All kinds of tales were told—legends of saints, romances of knightly deeds, fables of travellers, tales of common life, love stories, and animal fables.

SKETCHES FOR THE BLACKBOARD





Bath 15th Century Lamp Pot Hook

Peasant with Basket of Vegetables Street Lantern Treading Grapes—14th Century

Chaucer's "poor parson of a town" is a model for all helpers and teachers. He sets to his flock the noble example of patience, industry and unselfishness·

"A good man there was of religion,
And was a poor parson of a town;
And rich in holy thought and work;
He was also a learnèd man, a clerk,
That Christ's gospel truly would he preach;
His parishioners truly would he teach.

Wide was his parish, and houses far asunder,
But he left not for rain nor thunder,
In sickness or in mischief to visit
The furthest in his parish, much and little,
Upon his feet, and in his hand a staff
This noble example to his sheep he gave
That first he wrought and afterwards he taught"

Chaucer's *Canterbury Tales* was written in English, the best English of the period In his day both French and English were spoken at court and by the gentry, but Chaucer's poems and Wycliffe's Bible and prose writings show us that English had now become the speech of the English people

The other famous poet of this time is *William Langland*, whose great work is the *Vision concerning Piers Plowman* The poet lay down to rest on the Malvern Hills, and there fell asleep and dreamed In his dream he sees a field full of folk, in which there are all kinds of people—ploughmen, hermits, merchants, jesters, beggars, pilgrims, friars, a pardoner, and priests.

A lovely lady, who is Holy Church, explains the scene to the dreamer; the people in the field represent the virtues and vices of mankind—falsehood, flattery, bribery, peace, wrong, reason, and others

In the second part of the vision, the Seven Deadly Sins go to confess their sins, and then set out to seek Truth. Nobody knows the way till they meet a ploughman who offers to guide them But first of all they must help him to work; many are unwilling to do so, but are at last forced by hunger to help the ploughman.

The poem gives us a vivid account of the lives of the different people (such as robbers, friars, and nuns), of village life, of London ale-houses, and of all the vices of the time. It tells us of the hard lives of the poor, their low wages, poor food, and the wretched hovels in which they lived While Chaucer wrote of the bright side of life, Langland wrote of the gloomy and dark side. Chaucer's poetry is rhymed like modern poetry, while Langland's is alliterative like the Old English poetry Chaucer says.

"His arrows drooped not with feathers *low*,
And in his hand he bore a mighty *bow*"

Langland says

"In a *s*ummer *s*eason when *s*oft was the *s*un
I *sh*aped me in *sh*rouds as I a *sh*eep were."



CHILDREN CATCHING BUTTERFLIES WITH THEIR HOODS

SKETCHES FOR THE BLACKBOARD



Friar — Woman's Headdress—Time of Henry VI — Carrying Babies in a Double Pannier—late 14th Century — Mummers

X. WILLIAM CAXTON

PICTURE REFERENCE



THE Class Picture (No 50 in the portfolio) shows King Edward IV and his Queen visiting Master Caxton at his famous printing works, the *Sign of the Red Pale* The above illustration shows Earl Rivers presenting his book, the *Sayings of the Philosophers*, one of the first two books printed by Caxton, to Edward IV. Beside the king stands the queen, and their son who became Edward V.

INTRODUCTION

The Renaissance.—The last period of the Middle Ages is commonly known as that of the *Renaissance*, a French word meaning *rebirth*. It is a convenient term for all those changes in society, law and government, in art and literature, in science, philosophy and religion, which gradually transformed the civilisation of the Middle Ages into that of Modern Times The era of the Renaissance, like all periods of transition from one stage of development to another, cannot be exactly dated Some of the Renaissance movements, such as the study of Roman law and the development of cities, had begun before the fourteenth century, and others, such as geographical exploration and the Protestant Reformation, extended far beyond the sixteenth century.

The term Renaissance applied at first only to the rebirth of interest in the art

and literature of Greece and Rome This revival of interest first took place in Italy, and thence gradually spread over western Europe The state of Italy at the beginning of the fourteenth century peculiarly favoured the growth of learning and art The great cities in the north—Milan, Pisa, Genoa, Florence, Venice and many others—had thrown off their feudal obligations and had become self-governing and independent communities like the old Greek city-states Their widespread trade and thriving industries made them rich, and the possession of wealth brought leisure, a taste for luxury, and a growing interest in art and literature. Moreover, Italy had the glories of the past ever at her doors The traces of Roman civilisation were everywhere, and the influence of Greece was kept alive by Greek traders and colonists, who brought their language with them, and inspired Italians to learn it and so to discover more of the secrets of bygone civilisations.

During the Middle Ages the Italian peninsula formed the meeting place of many races and cultures The Byzantine emperor long ruled extensive territories in both northern and southern Italy, the Arabs by their conquest of Sicily introduced their culture into the peninsula, and the Normans, who settled in southern Italy and in the eleventh century took Sicily from the Arabs, brought with them the feudal civilisation of Europe All these influences helped in opening men's minds to new ideas, and so prepared the way for the Renaissance

The Germanic invasions of Europe had not entirely swept away the literature of Rome and Greece. Many manuscripts were preserved in monastic and cathedral libraries, where they were copied and studied by the monks and those who had leisure for scholarship The eleventh and twelfth centuries saw the foundation of many universities, at some of which a fairly wide course of instruction in Latin literature was given. Greek, however, was little studied, save by a few scattered scholars, though the medieval student might possess Homer's poems and Aristotle's treatises in Latin translations

Throughout the later Middle Ages, nevertheless, a gradual re-awakening of interest in the classics may be traced The great Italian poets of the thirteenth and fourteenth centuries, chief among whom were Dante, Petrarch and Boccaccio, did much to re-awaken the interest in classical antiquity Petrarch in particular showed a burning enthusiasm for Latin literature; he has been called "the first modern scholar and man of letters" He read Virgil, Horace, Livy and Cicero "not once, but a thousand times, not cursorily, but studiously and intently, bringing to them the best powers of his mind" He travelled over Europe searching everywhere for ancient manuscripts, and he found many, which he had copied and distributed The discovery of two lost orations of Cicero and some of his letters transported him with joy His one grief was his ignorance of Greek, an ignorance which cut him off from Homer except in translations. It was left to his friend, Boccaccio, the originator of the modern short story, to learn enough Greek to produce a translation of the *Iliad* and the *Odyssey*.

In the fifteenth century there was a revival in the study of Greek literature. Greek scholars from Bari or Constantinople traversed Italy and taught Greek in the Italian academies. One of these scholars, named Chrysoloras, wrote the first Greek grammar After the fall of Constantinople in 1453 learned Greeks went to Italy in such numbers that, as it has been said, "Greece had not perished, but had emigrated to Italy."

Fifteenth-century readers were amazed and delighted at the new world of thought and fancy which classical literature revealed to them They deeply appreciated the novel ideas which they found in the newly recovered works of such writers as Homer, Plato, Cicero, Horace and Tacitus. These writers seemed to throw a fresh light on human nature, and thus the enthusiasm for the

classics came to be known as "humanism." Both Greek and Latin literature and language were studied as the "humanities." A knowledge of Greek and Latin was the key which opened the door into this wonderful new world, and the learning of these languages constituted the foundation of all education.

From Florence, its first home, the new learning spread throughout Italy. Everywhere scholars began poring over the classics. Monastery and cathedral libraries were ransacked in search of the precious manuscripts. Almost all the Latin works which we now possess had been found by the middle of the fifteenth century. Libraries were built in which to house them, and students were given every facility for studying them. Wealthy families, such as the Medici at Florence, vied with the popes in their zeal for the new learning.

The invention of paper and printing.—The spread of learning was greatly hastened by the invention of the art of printing, which provided a more rapid method of reproducing books than hand copying. This invention was made doubly valuable by the introduction into Europe of paper in place of parchment as a writing medium. Paper was first used by the Chinese, and the process of its manufacture was learnt from them by the Arabs, who brought it into Europe after their occupation of Sicily. Paper was readily adopted as being much cheaper and lighter than parchment, and by the fifteenth century it had completely taken the place of the older material.

Paper readily receives impressions from printing type. Its use prepared the way for the utilisation of the invention of printing from *movable type*. The first step in the development of the art was the use of *fixed types*—that is of engraved blocks of wood or metal on which single letters, separate words, and sometimes whole pages of the text, were cut out. The second step was to make the letters separately, first cut in wood and later cast in metal, so that they might be arranged in any desired order for printing. The Chinese, Japanese and Koreans in the East had long used movable type, but it is not certain which printer in Europe invented the process. The first printing press with movable type was set up by Johann Gutenberg, of Mainz, in Germany, about A.D. 1450, and the first printed book issued from it was a Latin Bible.

From Germany the new art spread to Italy, where it was warmly welcomed. By the end of the fifteenth century Venice alone had over two hundred printing presses, and Aldus Manutius had set up his world-renowned establishment for the production of the "Aldine" classics, long famous as the high-water-mark in early book production. It was in the printing room of the Aldine press that the *italic* type was first employed.

The importance of the invention of printing cannot be over-estimated. It has been called "the greatest event in history." By means of it the number of books was increased enormously. Whereas a copyist could not hope to produce more than a few copies in a year, a printing press could supply them in thousands. The printed books, moreover, were far more accurate than those written by hand, as the mistakes inevitable in hand copying were avoided. They were also immeasurably cheaper, and the printers aimed at keeping the price low. Aldus sold some of his volumes for what would be equivalent to two shillings of our money. This meant that learning was no longer the sole prerogative of the wealthy and the leisured, but that poor men might become scholars if they would. The day of popular education had dawned.

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A Rich Lady's Bedroom
(Class Picture No 51 in the portfolio)

CHILDREN'S STORY

William Caxton.—Only a few years before Henry VII. came to the throne, the art of printing had been invented, and in the year 1476 William Caxton set up the first printing press in England Caxton was born in Kent, about 1422. We know little of his childhood, but he must have had a kind father and mother, who, though poor, gave him the best education they could afford, for when he was an old man he still remembered them with gratitude and affection "I am bound to pray for my father and mother's souls," he wrote, "who in my youth sent me to school, by which, by the sufferance of God, I get my living, I hope, truly."

William must have done well at school, for when the time came for him to learn a trade he was apprenticed to a wealthy silk mercer named Robert Large, a man of some importance, for he became the mayor of London. In those days it was the custom to put boys under a master in this way The master's duty was to feed and clothe his apprentice and to teach him his trade, while the apprentice took an oath to serve his master well and truly, to keep all his secrets, to do no trading on his own account, and to obey all lawful commands.

William, no doubt, lived the same sort of life as most other apprentices. They had long hours of work, with an occasional game of football in Cheapside, or archery practice in Moorfields. In 1438, when Caxton was living in London, times were hard, and the youth saw much misery around him Bread was very dear, and many people actually died of hunger. Caxton, in one of his books, tells us that "corn was so scarce that in some places poor people made themselves bread out of fern roots"

There were plenty of interesting sights to be seen in Merry London—tournaments, processions, May Day festivals and plays. There were frequent fights between the apprentices, or between the courtiers and citizens, in which we may suppose that young William took his part But, however busy he might be about work or play, he found time to read, and so to profit by the education which his parents had enabled him to gain.

William evidently did well at his work, for when Robert Large died he left to his industrious apprentice the sum of twenty marks—worth about £15. With this little fortune—equivalent perhaps to £150 to-day—Caxton went abroad to the Netherlands (the countries now called Holland and Belgium) and set up as a cloth merchant in the city of Bruges, for the Netherlands were then famous for the manufacture of cloth. He was evidently a careful and honourable business man, for when he was forty years old King Edward IV. made him governor of the English guild of Merchant Adventurers there

This difficult post he held for six years, and then he was engaged as a copyist in the service of Edward IV's sister, Margaret duchess of Burgundy. About 1467 he began to translate into English a book called the *History of Troy*. It was a long and tedious task, and he would never have finished the work had not the Duchess Margaret herself become interested and persuaded him to go on with it At last it was finished, and Caxton proudly presented his translation to the duchess The duchess and the English lords at court were delighted with this book written in their own language, and all wished for copies Caxton set to work to make them, but after working hard for some time he complained, "My pen is worn, my hand weary and not steadfast, mine eyes dimmed with overmuch looking on the white paper" Yet all the fine gentlemen whom he knew wanted to read his book, and were clamouring for him to make them copies of it. What was he to do?

He decided to learn printing, the new quick way of making books We do not know who taught him, or where he learned (probably at Cologne), but he was able to print his *History of Troy* in 1474 He wrote a preface to it in which he said, "I have practised and learned at my great charge and dispense (expense) to ordain this said book in print after the manner and form as ye may see,

and is not written with pen and ink as other books be, to the end that every man may have them at once, for all the books of this story here emprynted as ye see were begun in one day and also finished in one day" What a wonderful change is expressed in the last sentence the books were begun and finished in one day! Imagine how such a story must have surprised and excited the readers of those hand-written books, each of which had taken a monk or a clerk about a year to write The book was such a success that Caxton decided to bring his printing press to England and to set up a printer's shop in London.

Accordingly, at Michaelmas, 1476, a little shop was opened beside Westminster Abbey, near the west front of the church, at the Almonry, the place where alms of food and money were given to the poor Outside the shop hung a shield with a red bar or pale down the middle, and here at the *Sign of the Red Pale*, as the shop was called, Caxton and his apprentices worked at the precious printing press which he had brought over the sea with much care Caxton printed books to suit all tastes There were service-books for priests, sermons for preachers, stories of chivalry and adventure for the lord, and love tales for his lady Caxton printed much poetry, and for the children the old favourite, *Aesop's Fables* For his own son, Lewis, he wrote and printed a book called a *Treatise on the Astrolabe* which was meant to teach Lewis about the stars and the astrolabe, one of the instruments then used by mariners All manner of folk crowded into the shop to see the wonderful press at work. Lords and ladies, knights and squires, bishops and abbots, went to buy the books; and many were ready to lend him their own priceless hand-written volumes from which to make printed copies One day, a proud day for the master printer, he received a visit from no less a person than King Edward IV. himself, accompanied by his queen and a long train of courtiers, pages and ladies in waiting, who made his shop gay with their bright clothes and filled it with their merry chatter. For fifteen years Caxton laboured at the *Sign of the Red Pale*, and before he died, 1491, he had printed nearly one hundred different books

TEACHING HINTS

1. Introduction.—It will be necessary to introduce the story of Caxton by some reference to the *Renaissance* Try to get the children to understand that the changes and developments took place gradually over a long period of time. Remind them again of what they learned in previous years about the literature and ways of life of the Greeks and Romans Remind them, too, how Jenghis Khan drove the Ottoman Turks westwards, and how when these Turks gradually advanced on Constantinople, Greek scholars and merchants made their way to Italy bearing with them their literary treasures Show them if possible copies of pictures painted by Leonardo da Vinci (A.D 1452-1519) and Raphael (A.D 1483-1520) The most famous painting of Leonardo da Vinci is "The Last Supper", there are several beautiful illustrations of Raphael's work in Volume VI, and also one of the noted sculptures, "Moses," by Michelangelo (A D 1475-1564)

2. Fixed and movable type.—The difference between fixed and movable type can be demonstrated with a rubber stamp to represent the fixed type, and a toy printing-set with separate rubber letters to represent the movable type A teacher who has visited printing works will be able to give a brief description of modern printing.

3. Tudor Period.—It will be advisable to spend a few minutes to explain this term. Henry VII. was descended through his father from a Welsh gentleman named Owen Tudor, and through his mother from the House of Lancaster The Tudor Period extended from 1485 to 1603, that is for little more than the sixteenth century. The badge of the Tudors was a rose formed of

alternate petals of red and white. This badge was adopted by Henry VII when he united the houses of Lancaster and York by his marriage with Elizabeth of York.

York.	**Lancaster.**	**Wales.**
Edward IV.	John Beaufort	Owen Tudor (married Katharine, widow of Henry V)
	Margaret Beaufort, married	Edmund Tudor
Elizabeth of York, married	**Henry VII.**	

4. Family Tree.—Children are always interested in Family Trees, and they are useful for reference from time to time. Let them make up their own Family Trees, in the first instance beginning with their father, and then beginning with their grandfather. The Tudor Tree is here given for reference.

TUDOR TREE

Henry VII.

- Arthur (married Katharine of Spain) Died 1502
- Margaret (married James IV. of Scotland)
  - James V (of Scotland)
    - Mary (Queen of Scots)
      - **James I.** (of England)
- **Henry VIII**
  - **Mary I.**
  - **Elizabeth**
  - **Edward**
- Mary
  - Frances m. Henry Grey
    - Lady Jane Grey

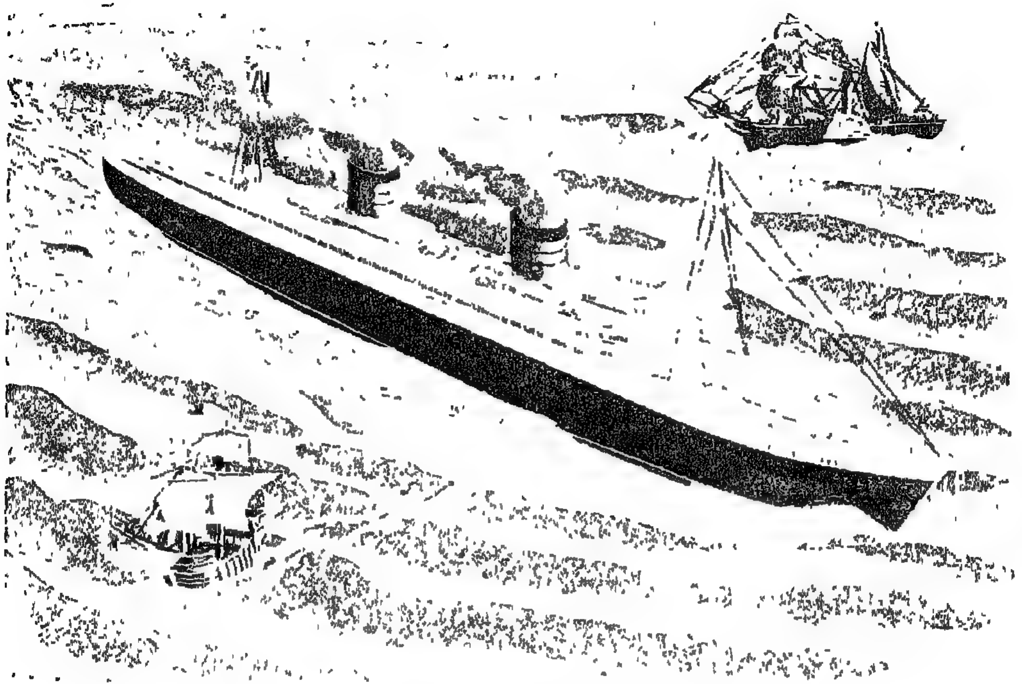
5. Memory work.—(*a*) During the Middle Ages books were very scarce. (*b*) The revival of learning in western Europe began in Italy. (*c*) The advance of the Ottoman Turks on Constantinople hastened the revival of learning in western Europe (*d*) The invention of printing has done more to alter the history and lives of men than almost any other event (*e*) William Caxton set up the first printing press in England

6. Exercises.—(*a*) What is the meaning of the word *Renaissance*? (*b*) Why were books so scarce in the Middle Ages? (*c*) Who wrote most of the books during the Middle Ages? (*d*) Why was the city of Constantinople so called and why was it important? (*e*) What effect had the advance of the Ottoman Turks on Constantinople? (*f*) Why did men wish to study Greek? (*g*) What is parchment? (*h*) How were books first printed? (*i*) For what is William Caxton famous? (*j*) How did the Duchess Margaret of Burgundy help Caxton? (*k*) Why did Caxton wish to learn printing? (*l*) Where did Caxton set up his press in England? (*m*) What was the sign on his shop?

An Early Printing Press

XI. HENRY THE NAVIGATOR—CHRISTOPHER COLUMBUS

PICTURE REFERENCE



THE "SANTA MARIA," THE "SIRIUS" AND THE "QUEEN ELIZABETH"

(Class Picture No 52 in the portfolio)

IN the *Santa Maria* Christopher Columbus discovered America, 1492 The *Sirius* was the first ship to cross the Atlantic under its own steam, 1838 The *Queen Elizabeth* was launched in 1938

INTRODUCTION

The geographical Renaissance.—Besides the revival of learning, the Renaissance also caused a revolution in geographical knowledge A new spirit of adventure and enquiry led to the discovery of America and the opening up of trade routes to the Far East. Besides the vast stimulus thus given to commerce between East and West, two new continents were made accessible to Europe, with all their untouched wealth and opportunities of colonisation

Most of Europe and Asia had been familiar to the Greeks and Romans, but during the Middle Ages much of their knowledge was either forgotten or strangely distorted. One cause of distortion was the influence of theology. On the supposed authority of the Bible, "Jerusalem, set in the midst of the nations and countries that are round about her" (Ezekiel v. 5), was assumed to be the centre of the earth, round which medieval cartographers fitted in the rest of the known world as best they might Students, with imaginations untrammelled by the scientific knowledge which we now possess, peopled the unknown areas of the world with monsters, headless men, one-eyed giants, sea serpents, mermaids, ice demons and other fabulous creatures of which they had read during their study of the classics Even educated men believed implicitly in the existence of these beings, and such beliefs doubled the terrors of travel

During the later Middle Ages, however, various causes helped to dispel this fog of superstition and myth-mongering Chief among them were the crusades. The crusaders penetrated into lands long unknown to Christendom. They were followed by traders who by 1300 had opened up eastern countries beyond the Land of the Two Rivers The great figures of later medieval geography are Nicolo and Maffeo Polo, and Maffeo's son Marco. These intrepid merchants travelled as far east as Cathay (China) and took service at the court of the Mongol emperor Kublai Khan at Peking. (See the story of Jenghis Khan, Chapter IV. of this volume.) The story of their travels, as written down at Marco's dictation, became one of the most popular works of the Middle Ages. It made Europeans eager to reach the East themselves, and to see the marvels of Cathay which Marco Polo described, and the even greater marvels of the isle of Cipango (Japan) of which he had heard—an island supposedly inhabited by civilised white men, and so rich in gold that the royal palace was paved and roofed with the precious metal.

Development of navigation.—While the desire to explore the unknown parts of the earth was thus growing in the minds of men, improvements in the art of navigation were gradually making wider exploration possible. The mariner's compass was perfected from a floating north-pointing needle—knowledge of which was probably learned from the Chinese via the Arabs—to an instrument balanced on a pivot so that it could be used in a rough sea The possession of this nautical instrument made long voyages independent of the state of the weather or the visibility of the stars. A second nautical instrument was the *astrolabe*, the astronomical apparatus brought into Europe by the Arabs for calculating latitudes by observing the height of the sun above the horizon It was the ancestor of the modern quadrant and sextant, and enabled a captain to know his exact latitude at any point on his journey. Other aids in finding position were the hourglass, the sundial, and a rude form of the log, which made it possible to estimate the speed of a vessel and so roughly to find the longitude

Map making, too, had vastly improved during the closing centuries of the Middle Ages, and sailors could obtain "handy maps" of the Mediterranean and its neighbouring waters Books of sailing instructions were also available, giving information concerning tides, currents and other peculiarities of the various sea routes. Moreover, shipbuilding had made much progress. Vessels were larger, carried bulkier cargoes and were safer to navigate. The oared galley had been replaced by the sailing vessel for long voyages Furthermore, vessels were armed with guns which lessened the risk of piracy. As a result of all these improvements, seamen no longer found it necessary to hug the shore, but could brave the open sea and sail for weeks at a time out of the sight of land

Motives of exploration.—The motives for exploration were mixed The Renaissance spirit of scientific enquiry went hand in hand

with the medieval crusading fervour, which had not entirely died, and which found a new outlet in schemes for the conversion of the heathen in yet undiscovered lands This was the main motive in the mind of Prince Henry the Navigator, to whose inspired exertions we owe the exploration of the west coast of Africa, the rounding of the Cape of Good Hope, and the ultimate opening-up of the eastward ocean route to India

The most powerful of all motives for exploration, however, was trade, particularly the trade in spices. At a time when so much salt meat and fish were eaten, spices were used more freely than in modern times, in order to render the salt food palatable Even wine, ale and medicine were seasoned with cloves, cinnamon and ginger The price of these commodities was inordinately high, because of the number of middlemen who made their profit from transporting them on the long land and sea journey across Asia. It was felt that a sea route to the Far East, which would shorten the journey and lessen the expenses of transport, would be well worth the money spent on its discovery.

The two sea routes to India.—

(1) *Eastward—Prince Henry the Navigator.* In the history of fifteenth century geographical discovery the name which stands out above all others is that of the Portuguese prince Henry, surnamed the Navigator because for more than forty years he devoted himself entirely to organising scientific exploration He was born in 1394, the son of John I of Portugal, and grandson of John of Gaunt, the English duke of Lancaster. About 1419, after a career of adventure, he was made governor of the southern province of Portugal, and established himself at the town of Sagres, close to Cape St. Vincent. This seaport, later known as the "Infante's Town," he converted into a naval arsenal as a base for his expeditions Here he built a palace, a chapel, a library, an observatory, and houses for his helpers and attendants At Sagres schemes of discovery were thought out, maps and instruments collected and sailors' accounts compared. It became the centre to which came information as regards ships, distant lands, routes, currents and anything likely to be useful to mariners "From Sagres went out our sailors well-taught and provided with instruments and rules which all map makers should know." Beside the great improvement in map making, which was one of the results of Prince Henry's work, great progress was also made in shipbuilding "The caravels of Portugal," said one of the Prince's sea captains, "were the best sailing ships in the world"

The first of Prince Henry's expeditions set out in 1415, and the years 1415-1425 were spent in discovering and exploring the Canary islands In 1427 the Azores were re-discovered. All this while his ships were attempting unsuccessfully to sail southward along the west coast of Africa. The chief difficulty was the unwillingness of the Portuguese sailors to round Cape Bojador, the "end of the world," for they believed that beyond it the sea boiled with the heat, and the sun's rays were so fierce that no human being could live there At length, in 1434, after many attempts, the dreaded cape was doubled with no ill effect, and by 1441 the Portuguese had reached Cape Blanco. They got as far as the bay of Argium in 1442 and the river Senegal in 1445, Cape Verde being rounded in the same year. In 1448 the Gambia was reached, and the Gold Coast in 1462, two years after Prince Henry's death. By 1482 exploration had proceeded as far south as the mouth of the Congo, and in the next year Diego Cam reached a point just north of Walfish Bay, and within measurable distance of the southern extremity of the continent. In 1487 the Cape of Good Hope was rounded by Bartholomew Diaz, and in 1497 a Portuguese nobleman named Vasco da Gama completed the discovery of the eastward ocean route to India by sailing round Africa as far north as Mombasa on the east coast, and from there sailing across the

Indian ocean to Calicut, an important commercial city on the south-west coast of India, where he landed in May, 1498.

It will be seen from this brief account of the successive stages in which the discovery was made that the prime mover in the whole campaign was Prince Henry himself, and that Cam, Diaz, da Gama and the other captains who completed his work after his death, and received the credit and the honour of their discoveries, were in effect little more than the Prince's executors.

(2) *Westward—Christopher Columbus*, 1446 (?)-1506—*the discovery of America.* It was while seeking to reach China and the Indies by a westward route that, six years before da Gama reached Calicut, Christopher Columbus discovered America. The possibility of reaching China and India by sailing westward had long been entertained. A Latin translation of the works of the Greek geographer Ptolemy appeared during the middle of the fifteenth century, and men had come to realise with increasing certainty that the earth is round. Attempts had been made to calculate its circumference and the approximate distance of such a trans-Atlantic voyage, but these calculations had underestimated the bulk of the earth, making it only one-sixth of its actual size.

Beside this miscalculation, the geographers and navigators of the day were ignorant of the existence, in the midst of the ocean which they wished to cross, of the continent of North and South America. Rumours of great islands in mid-ocean were current, but the presence of a vast land mass was completely unsuspected. Thus it came about that the discovery of America by Columbus took place accidentally as the result of a misconception.

Christopher Columbus was the son of a weaver of Genoa, in Italy. He seems to have studied astronomy and geography at the university of Padua, but he became a sailor at an early age. He was well acquainted with the Mediterranean sea, and he also made a voyage to Guinea in Africa. He possibly visited Iceland, and may have heard there stories of the old Vikings who visited the coast of America in the eleventh century. He settled at Lisbon in Portugal as a map maker, and married a daughter of one of Prince Henry's sea captains. While studying old maps and charts, the idea came to him of a western sea route to India. He found apparent confirmation of his idea in classical writers, and his ardour to visit the unknown lands of the Far East was strengthened by reading Marco Polo's accounts of Cathay and Cipango. All influences conspired to strengthen his resolution to sail westward in search of the Indies.

The story is well-known of how he wandered from one European court to another, from Portugal to England and from England to Spain, seeking the patronage which would enable him to carry out his scheme, how, after incredible delays, disappointments and rebuffs, he found a patron in Queen Isabella of Spain, how with three small ships he set out on August 3, 1492, how he sailed for weeks with a mutinous crew over unknown waters, and how at last, in the early morning of October 12, when his very life hung in the balance, he sighted the coastline of one of the Bahama islands. The New World was found.

Columbus made three other voyages to the West Indies and South America, but he believed until the day of his death that he had reached the actual mainland of Asia. The name "West Indies" itself remains as a witness of his pathetic mistake.

Other famous navigators.—After the death of Columbus a Florentine navigator, *Amerigo Vespucci*, made several voyages westward in the Spanish service and he seems to

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have been the first to realise that the newly discovered land was in fact a new continent. In 1497 he printed an account of his voyages in which he claimed to have discovered the mainland of America, though his claim is now generally disallowed His contemporaries, however, believed his story, and thus it came about that the new continent was called America "because Americus discovered it," instead of Columbia after its true discoverer.

So far the two great pioneer nations in geographical discovery were Spain in the West and Portugal in the East. In order to mark off clearly the possessions of the two countries, the Pope laid down an imaginary line of demarcation in the Atlantic. At first this imaginary boundary lay about three hundred miles west of the Azores, but later, in 1494, it was shifted eight hundred miles farther west, so that when the Portuguese discovered Brazil in 1500 it was found to be within their sphere of influence Any new discoveries west of the line were to belong to Spain, any east of it to Portugal.

Magellan, 1480(?)-1521. The dream of a western route to India was not yet abandoned. Ferdinand Magellan, a Spanish commander, believed that the way might still be found round the southern end of South America, and in 1519, with royal permission, he set out with a fleet of five ships to find an all-Spanish route to the East. Sailing down the east coast of America, he came to the strait which now bears his name Through this channel he sailed into a sea so calm and peaceful that he named it the *Pacific* ocean. For ninety-eight days he sailed westward, refusing to turn back even if he had to "eat the leather of the rigging," till he reached the Philippines, where this indomitable commander was killed by natives His men, however, struggled on, and one ship managed to reach Spain at last, carrying the few sailors who had been able to survive the hardships of a voyage of nearly three years' duration This circumnavigation of the globe is an important landmark in the history of geographical discovery It proved incontestably that the earth is round It showed that South America had no connection with Asia, it led to the exploration of the Pacific, and it gave a rough estimate of the circumference of the globe, from the distance sailed by Magellan's ships

In 1580 Philip II of Spain annexed Portugal, and thus the monopoly of all the new discoveries passed into Spanish hands. This state of affairs could not long endure Spanish supremacy was challenged both by the French and by the English. *John Cabot* from England and *Jacques Cartier* from France both claimed land in America. English seamen ravaged the Spanish colonies and captured Spanish treasure ships. Sir Francis Drake was the most famous of these "sea dogs" and was also the first Englishman to complete a voyage round the world (1577-1580).

Effects of the discovery of the New World.—The chief effects on Europe of the great geographical discovery of the Renaissance period, particularly the discovery of America, may be summarised as follows:—

1 *European expansion.* The new territory was rapidly invaded by explorers, missionaries, colonists and traders from the Old World.

2 *Opening up of new trade routes.* The trade routes of the world shifted from the Mediterranean and the Baltic to the Atlantic

3 *Increased production of precious metals.* Europe was flooded with American gold and silver. It has been estimated that during the sixteenth century the amount of gold and silver current in Europe was trebled

4. *New commodities imported.* Among the new commodities introduced into the Old World from the New may be mentioned maize, potatoes, chocolate, cocoa, quinine, cochineal, sugar cane, dye woods, mahogany, molasses, whale oil, furs and tobacco

5 *Political effects.* The countries facing the Atlantic—Spain, Portugal, the Nether-

lands, France and England—grew in importance, and embarked on those trade rivalries which have so often plunged Europe into war.

6. *Geographical ideas.* Geographical ideas were revolutionised by the sudden disclosure of an unknown area amounting to a third part of the globe. Men's imaginations were stirred at the thought of further amazing discoveries which might yet be made.

7. *Effect on religion.* The following century saw the great Protestant Reformation, the struggle against ecclesiastical authority and the consequent persecutions Bodies of persecuted men and women, whatever their faith might be, found in America a refuge and a home. The Puritans settled in New England, the Roman Catholics in Maryland and the Quakers in Pennsylvania. The Church—old and new—lost much influence in Europe, but the territory, wealth and influence gained in America more than offset the loss.

CHILDREN'S STORY

Henry the Navigator.—The man to whom the world is mainly indebted for making it possible to discover an *eastern* sea route to India was Prince Henry of Portugal, commonly called the Navigator, because he gave up his life to exploration by sea. He was a son of King John I. of Portugal and was born in 1349 at Oporto. He is of special interest to Englishmen because he was a great-grandson of an English king, Edward III., whose grand-daughter, Philippa, married King John I. As a young man the prince went with a Portuguese army to take the town of Ceuta, in Africa, from the Arabs Here the prince met Arabs who had visited places on the west coast of Africa, and he learned much from them about lands unknown to him Prince Henry was a good Catholic, and one great desire of his heart was to explore distant lands and to convert the heathen in them to Christianity. To further his designs of discovering these lands he built a seaport, named Sagres, at the extreme south-west corner of the Spanish peninsula There the prince made his home and gathered about him learned men, map makers, geographers, travellers and mariners to discuss his plans. From accounts left by his friends we can learn what kind of a man Prince Henry was. "The noble Prince was of a good height and broad frame, big and strong of limb, the hair of his head somewhat erect, his colour naturally fair, but by constant toil and exposure it had become dark. His expression at first inspired fear in those who did not know him, and when wroth, though such times were rare, his countenance was harsh. He possessed strength of heart and keenness of mind to a very excellent degree, and he was beyond comparison ambitious of achieving great and lofty deeds . . . His palace was a school of hospitality for the good and high born of the realm, and still more for strangers, commonly there were found in his presence men from various nations. All his days he spent in the greatest toil, it would be hard to tell how many nights he passed in which his eyes knew no sleep."

At last the prince was satisfied that it was possible to sail by the western coast of Africa and so to reach India Many expeditions were sent out Some fleets visited the islands of Madeira, the Canaries and the Azores, others sailed southward along the African coast For eighteen years, however, none would venture farther south than Cape Bojador (the Bulging Cape near the equator) for the sailors believed that beyond the cape the sea was boiling hot and the rays of the sun were so fierce that those on whom the rays fell would be burnt black At last, in 1434, a brave captain sailed round the dreaded cape, and to his surprise found the sea "as easy to sail in as the waters at home," and the land pleasant and fruitful. After this there was no more trouble, and Prince Henry's ships pushed their way westwards to Cape Verde, the "Green Cape," so called because of its abundant vegetation.

There was great rejoicing in Portugal at the progress of the discoveries Unfortunately the sailors began a traffic in slaves The defenceless natives of the African coastlands were kidnapped and carried back to Portugal to be sold as slaves Prince Henry did his best to put a stop to this terrible traffic and he sent out missionaries to convert the Africans

In 1460 the prince died, but his great work continued In 1487 Bartholomew Diaz reached Walfish Bay, and from there decided to sail westwards and explore the Atlantic in search of a great island supposed to lie thereabouts. He found no island, and strong winds drove him back toward Africa, but southwards, so that almost by accident he was blown round the southern point of the continent and came out into the Indian ocean He named the cape which he had passed the Cape of Storms, but when the king of Portugal heard of the discovery, he realised that the long-cherished hope of finding a sea route to the East would shortly be fulfilled, and he re-named the cape the Cape of Good Hope

The way to India was now clear, and in 1497 Vasco da Gama, with four tiny ships, set out to travel to India by the new route. He rounded the Cape and sailed on by the east coast of Africa as far as Mombasa Here he found settlements of Arab traders, who were unfriendly and refused to give him either provisions or a pilot. After some delay, however, a pilot was found and da Gama sailed eastward across the Indian ocean, and landed at Calicut in May, 1498 He returned to Portugal after an absence of two years with a cargo worth sixty times the cost of the expedition The Portuguese king received him with high honour, and created him Admiral of the Indies

Thirty-eight years after the death of Prince Henry the Navigator, the eastern route to India, of which he had dreamed, lay open This was a great gain to Portugal From this time, for over one hundred years a large fleet left Lisbon (the chief town of Portugal) every year for India The advance of the Turks struck a mortal blow at the prosperity of the Italian cities which had so long monopolised the Eastern trade, and now Lisbon became the chief European market for the merchandise of the East

Portuguese trading stations were established on the coasts of Africa and Asia. Only their own merchants were allowed to bring goods to Europe by the Cape route, and English, French and Dutch merchants came to Lisbon for their spices and other commodities, and they, instead of the Italians, distributed them throughout Europe.

Christopher Columbus.—Six years before Vasco da Gama landed in the harbour of Calicut another intrepid sailor anxious to find a western route to India accidentally discovered America. This was Christopher Columbus, a weaver's son, who was born, probably, at Genoa in Italy, about 1446 The facts of his early life are not known with certainty, but he appears to have had a good education, and to have studied astronomy and geography at the university of Pavia At an early age he became a sailor. About 1478 he settled down in Lisbon and married a daughter of a sea captain who had been in the service of Prince Henry the Navigator He probably employed his time in making maps and charts for a livelihood, and he had many long talks with old seamen about their voyages, and of the mystery of the western seas. Among his books was a printed copy of Marco Polo's book, and we know from his comments written on the margin of the book how interested he was in Polo's accounts of Cathay and Cipango Gradually he came to the conclusion that as the world was round, he could, by sailing due west farther than any ship had yet dared to go, reach India, but he of course did not know, or suspect, that the American continent lay between Columbus was so sure that his ideas were right that he went from court to court to get money for an expedition. At last, after years of weary waiting, Ferdinand and Isabella of Spain agreed to assist him The queen was

so convinced that this humble sailor did know how to find the way to the unknown land that she was willing to sell her jewels to obtain money with which to help him in fitting out ships. This, however, was not necessary, for her husband, King Ferdinand, provided the money and fitted out the ships. At last Columbus was ready to set forth

The expedition consisted of the *Santa Maria*, which carried a crew of fifty-two men and was commanded by the admiral in person, and two other tiny vessels, the *Pinta* and the *Niña*, each with a crew of eighteen men. On August 3, 1492, at eight in the morning, the little fleet weighed anchor from Palos. Day by day the trade wind blew them steadily westwards till the sailors began to lose heart, and thought that they would be carried on and on till they died of starvation Columbus had much trouble to prevent a mutiny among some of his crew, and finally he was obliged to promise that if land were not sighted within three days he would turn back But by that time there were numerous signs that land was near. Birds that were known never to go far from shore were seen, pieces of wood that had been carved by men, and a broken branch of a tree with fresh berries on it floated by, "and with these signs all of them breathed and were glad" At two o'clock on the morning of October 12, 1492, the booming of a cannon from the *Niña* told that land had been sighted The land was an island, which Columbus named San Salvador (It is generally identified as Watling Island)

The same morning Columbus landed, richly clad, and bearing the royal banner of Spain When they all had "given thanks to God, kneeling upon the shore, and kissed the ground with tears of joy, for the great mercy received," the admiral named the island and took solemn possession of it for their Catholic majesties Ferdinand and Isabella After many adventures, among which the *Santa Maria* ran aground on one of the islands and was lost, Columbus arrived back in Spain and proceeded to the court, which was then at Barcelona He entered the city in a triumphal procession, related his story and showed the "rich and strange" spoils of the new-found lands—the gold, the cotton, the parrots, the curious arms, the mysterious plants, the unknown birds and beasts, and the "Indians" he had brought with him for baptism. Columbus was given the title of Don, he rode at the king's bridle, he was served and saluted as a grandee of Spain. Although Columbus had found only an island he felt sure that the mainland of India was not far distant Ever since his day the islands off the American coast in the Gulf of Mexico have been known as the West Indies, and the native races of North America as American Indians.

Columbus made three other voyages to the New World, but misfortune attended him in his last two expeditions. Queen Isabella died in 1504, the ungrateful King Ferdinand neglected him, so that Columbus died in poverty, 1506 In his later years Columbus suffered a good deal from illness Although he had failed to find a westerly route to India and the realms of the Great Khan at Cathay, he had made the most notable voyage in history

TEACHING HINTS

1. Introduction.—It will be advisable at the beginning of the stories of Henry the Navigator and Columbus to point out some of the causes which led to the great geographical discoveries: the larger and well-armed ships, the use of the mariner's compass, the difficulties attending the transport of merchandise from India to Venice (the great distributing centre), the need for spices, the Renaissance spirit in men.

2. Map.—For this lesson a map of the world and a globe are needed. If a globe is not available use a large ball, or even an orange or a grapefruit Show how from any point on the globe two circles can be drawn—an east-west circle and a north-

south circle. Then explain how the frozen seas prevented mariners from going by a north-south circle. Show that Cathay could have been reached by Columbus had there been no continent of America. Trace the voyage of Magellan (or Drake) who circumnavigated the world

3. The compass.—Explain the difference that was made to seamanship by the introduction of the compass. Before that time a ship on the high seas was at the mercy of the weather, and the captain had no means of taking bearings or of steering a straight course. Seamen were generally obliged to sail within sight of land, although the bolder among them, such as the Vikings, did venture on longer voyages If possible show the children a mariner's compass, or make some experiments with a magnetised needle to illustrate its properties (See lesson in the Science course, Volume VI.)

4. The crusades.—Refer again to the crusades, page 17; how they introduced men of the West to the culture and wonders of the East. Mention, too, should be made of the story of Marco Polo, page 29, and the effect of his writings on the people of the period. (See also Vol VI, p 519)

5. The American Indians.—The American Indians are believed to have had their origin in the eastern hemisphere, migrating to America from Siberia via the Bering Strait. The Indian belongs to the Mongoloid division of the human species. He is brown skinned with straight, stiff, black head hair, a minimum of beard and a broad face. The American Indians are red only when they are painted. At the time of the Spanish invasion the number of Indians was apparently very large, indeed it is surmised that the country was as fully populated then as it is now. In such a vast country with great diversities of climate, customs naturally varied. The tribes knew the use of the drill for making fire, they had stone implements for cutting, scraping, chopping and piercing; they worked the softer metals—copper, gold, silver, tin and lead, they made cordage, netting and basketry. Pottery making, but without the wheel, was universal. The agricultural implement was a simple hoe or digging stick and the principal food crop was maize. In the tropical region were cultivated the potato, sweet potato, manioc, tomato, pineapple, tobacco, chocolate, etc. The domesticated animals were the dog and (in Peru) the alpaca and llama. Cattle and sheep, the goat, pig, horse, ass, camel and reindeer were unknown until after the Spanish invasion, as also were the grains wheat, barley, rice, etc. Europe owes to aboriginal America the snowshoe, moccasin, toboggan, poncho, hammock, pemmican, tapioca and quinine.

6. Memory work.—(*a*) The fifteenth century was an age of discovery. (*b*) Men wanted to find a sea route to India because pirates and robbers interfered with the merchandise brought overland (*c*) The Portuguese and Spaniards were the leaders of discovery. (*d*) Continuing the work of Henry the Navigator, Vasco da Gama found a sea route to India (*e*) Christopher Columbus sailed across the Atlantic and in 1492 discovered an island off the American coast.

7. Exercises.—(*a*) How were goods conveyed from India to Europe during the Middle Ages? (*b*) Why were spices so valuable in those days? (*c*) Which city was the centre of European trade during the later Middle Ages? (*d*) Why was the discovery of the mariner's compass of great value to navigators? (*e*) Who was Henry the Navigator? (*f*) For what is he famous? (*g*) How did Portuguese navigators try to find a way to India? (*h*) For what is Columbus famous? (*i*) How do you know that he was a brave man? (*j*) Why were most seamen afraid to voyage into unknown seas? (*k*) What was the name of Columbus's ship? (*l*) Why did Columbus call the land he discovered the *Indies*? (*m*) Why was the New World called *America*?

XII. THE BIRTH OF THE REFORMATION

INTRODUCTION

THE religious movement generally known as the "Reformation" which took place in the sixteenth century was a political and religious revolution which divided western Christendom into two camps, the Catholic and the Protestant (For teachers who may wish to omit this difficult chapter there is a Class Picture of *A Miracle Play* (No. 53 in the portfolio) with a description in the Reference Book)

Moral causes.—The most important of all the causes for the Reformation were moral From the twelfth century onwards distinguished churchmen urged the crying need for reform. From Pope Innocent III. in 1215 to Pope Leo X in 1512, nine great Church councils discussed the question of reform, but with little success. It was acknowledged that there was great laxity in the character and teaching of the clergy, that the lives of many monks, friars and nuns were bad examples to the people, that the multiplication of holy-days was attended not by increased sanctity, but by vice and riot. There was a lack of that spiritual fervour which had been the distinguishing characteristic of the clergy during previous centuries.

The decline of the Papacy.—During the thirteenth century the popes reached the summit of their spiritual and temporal power They not only ruled supreme over Christendom, but they governed as monarchs a large part of Italy, and had great influence in the affairs of France, England, Spain and other countries

The fourteenth century, however, saw a rapid decline in the papal prestige. There were three main causes for this decline The first, in 1303, was the humiliation of Pope Boniface VIII, the last of the great papal monarchs. Boniface attempted to exercise his authority in temporal as well as in spiritual affairs, and by so doing involved the papacy in many controversies with leading European powers There was a noted conflict with Philip IV. of France, and in the struggle which ensued the French vice-chancellor was sent with a band of soldiers to arrest the Pope at Anagni, near Rome. The Pope was imprisoned for three days until released by the citizens He was then conducted to Rome and confined in the Vatican, where he died soon afterwards

Philip followed up the blow which he had thus delivered at the papal power by having a French archbishop chosen as Pope. The new Pope transferred his court to Avignon, near the French frontier, where he and his successors lived for nearly seventy years. This period is called the "Babylonian Captivity of the Church" by analogy with the exile of the Jews in Babylon This exile of the popes from Rome still further lowered the papacy in the eyes of Europe. England, engaged in the Hundred Years' War with France, was naturally alienated, and she stopped the payment of her annual tribute and enacted the anti-papal statutes of Provisors and Præmunire. Germany was openly hostile and Italy rose in revolt. For a short time (A.D. 1347-54) Rome was a republic under Rienzi.

A third cause of the decline of the papacy was the Great Schism which lasted from 1378 to 1417. Soon after the return of the papal court to Rome the Italian cardinals elected Pope Urban VI., but the French cardinals refused to accept him, and elected Pope Clement VI. Thus there were two "supreme heads" of the Church, and some countries obeyed the one and some the other. For about forty years this sad state of affairs continued, and the loss of papal prestige

was very great in consequence. The Great Schism was finally healed at the Council of Constance, when Martin V was elected Pope, 1417.

While internal troubles were thus weakening the power of the papacy, the city-states and principalities of Europe were growing in importance and independence Medieval Christendom was breaking up politically as well as spiritually. When men no longer looked to the Pope to control their secular lives for them, they began insensibly to question his right to spiritual control Some popes interested in the Renaissance movement kept splendid courts and built magnificent palaces and churches Some people resented the payment of the taxes which were needed to support the papal courts. Many who criticised the papacy and the clergy adduced the Bible as their authority, and supported their arguments by quoting from it In order that their followers might verify these quotations, the Bible must be accessible to all, and hence developed the demand for the translation of the Scriptures into the vernacular

The heretics.—Some of the reformers were loyal supporters of the Church, who wished only to see its abuses done away with. But others went so far as to criticise and attack the doctrines of the Church. These men were called *heretics*, from a Greek word meaning "to choose." A heretic was one who claimed for himself the right to choose what he should believe The Church, on the other hand, declared that it alone was the supreme authority in matters of faith.

Ever since Christianity had become the religion of the State, under Constantine the Great, and had formulated a creed setting forth the doctrines essential to salvation, the claim to freedom of religious thought had of necessity become heresy. In order to preserve the authority of the Church, all divergence from its teaching must be ruthlessly stamped out, both for the sake of the heretic, whose false belief imperilled his soul, and also for the sake of the Church to keep dangerous doctrines from contaminating the faithful Death itself was not considered too drastic a measure to save a soul and prevent heretical opinions from spreading.

Yet, in spite of the dread penalties inflicted upon heresy—confiscation of goods, imprisonment and death—there were not a few heretics in the Middle Ages. In 1170 *Peter Waldo*, a rich merchant of Lyons, sold his possessions and gave them to the poor; then he went forth as a preacher of voluntary poverty. His followers, the *Waldenses*, the "poor men of Lyons," were moved by a religious feeling which could find no satisfaction within the Church as they saw it Waldo and his preachers explained the Scriptures with the aid of a translation of the New Testament. They were fiercely persecuted, but survived as a sect until they were absorbed in the general movement of Protestantism.

In England *John Wycliffe* (1320-1384) held beliefs similar to those of the Waldenses, particularly as regards the authority of the Bible as opposed to that of the Church. He produced the first English translation of the Bible, which was widely read till suppressed by the Government. Wycliffe's followers were known as the *Lollards*. His doctrines were spread by bands of "poor priests" who travelled through the length and breadth of England, simply clad in long russet gowns, carrying staves and portions of Wycliffe's translation of the Bible Wherever they could find an audience, they preached in English, expounding the Bible and attacking many practices of the Church. These "Bible men," as they were called, and their followers were condemned as heretics and suffered persecution, but their work helped to sow the seeds of the Reformation in England

John Huss (*c* 1373-1415) John Huss was a Bohemian reformer, born of peasant parents but educated at the university of Prague, where he began to lecture in 1398. He was later appointed rector of the univer-

sity and also rector of the Bethlehem chapel which had been erected by zealous citizens of Prague to provide popular preaching in the native tongue. Huss was greatly impressed by the teachings of Wycliffe, and in a series of sermons he admonished the clergy. Excommunication failed to check his activities; and although the city of Prague was placed under an interdict, king, queen and populace continued to support Huss Finally, in 1413, he was requested to appear before the Council of Constance and he received from King Sigismund imperial "safe conduct," which implied that whatever judgment might be passed on him he would be allowed to return freely to Bohemia If faith to him had not been broken he would have been sent to Bohemia for punishment The council finally demanded that Huss should declare that he had erred in all the articles cited against him, that he should publicly recant them and promise on oath neither to hold nor teach them in future. He declined and was sentenced to death. Immediately he was handed over to the secular authority and burned at the stake The treachery of the king is undeniable. The followers of Huss regarded him as a martyr and as a national hero A large body of the Bohemians were Slavs, and the Hussite movement assumed a revolutionary and nationalistic character which led to prolonged war Huss may be said to have handed on to Luther the torch he had received from Wycliffe.



MARTIN LUTHER PREACHING
Contemporary German MS of his Prayers

Martin Luther (1483-1546) —Wycliffe, Huss and their followers prepared the way for the Reformation, but the actual inception of the movement must be ascribed to Martin Luther. Luther was born in the German town of Eisleben in 1483 His father was a hard-working peasant, whose work was smelting copper ore from the local mines As a child, Luther led the simple life of a German peasant, but his father managed, at the cost of great self-sacrifice, to give his son a good education, first at the local school and then at larger establishments in Magdeburg and Eisenach Here he was a "poor student," living in a hostel, paying no school fees and possessing the privilege of begging for his bread at the house-doors of the town. In 1501, at the age of eighteen, he entered the university of Erfurt, where he took the master of arts degree unusually early. He then began to study law, and was soon known as a young man of promise, a good companion, an excellent lute-player and a ready speaker in university debates. But this promising career was cut short by a sudden awakening of his religious conscience. He became filled with an ardent desire to save his soul, which drove him into an Augustinian monastery There, through reading the Bible and studying the writings

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of the early Fathers of the Church, he found at length the spiritual peace and assurance which he sought. In 1510 he was sent on a mission to Rome. He set out for the Holy City in the fervent devotional spirit of a medieval pilgrim, but he appears to have been painfully impressed by secularised ecclesiasticism and the low moral standard of the Holy City. On his return in 1512 he was appointed professor of theology at the newly-founded university of Wittenberg. His sermons and lectures attracted so many students to the new university that its founder, the elector of Saxony, grew proud of the young professor who was making his university celebrated, and the elector became Luther's patron.

In 1517 occurred the event which, by a seeming accident, brought Luther into the public eye and forced upon him his career as a reformer. In that year a Dominican friar named Tetzel appeared at Wittenberg, selling *indulgences*. The sum raised by this means was to go toward the completion of the great church of Saint Peter at Rome. An indulgence was a form of remission of the temporal punishment, or penance, due to sin. Sin, according to Church doctrine, merited punishment, both by penance on earth and also by a period of purgation after death. If, however, the penitent were truly sorry for his sin, he might by the purchase of an indulgence obtain the remission of the earthly penance, and of all or part of the punishment hereafter. Indulgences were first granted for participation in crusades, pilgrimages and other good works; later, they were granted for money, which was applied to some pious purpose. Such a practice easily became perverted, and led to confusion of thought. There was a temptation to the common people, who could not read the Latin in which the indulgences were written, to think that they were purchasing pardons for sin, without the need for true repentance. These dangers were so apparent to Luther that he felt himself bound to attack the system of indulgences, and to discuss their true meaning.

He set forth his criticisms in ninety-five theses, or propositions, and nailed these up on the church door at Wittenberg, offering to defend them against all opponents. This was the ordinary procedure of a scholar who wished to bring up a subject for discussion. Luther's action was purely academic, and the theses were written in scholarly Latin. But they expressed the smouldering discontent and widespread criticism of the time, and there was immediately a great demand for copies. They were translated into German, printed and widely circulated all over Germany. It was not long before Luther found himself the leader of a movement which attacked the papal claims and consequently the papacy itself. He sent forth his three great reform treatises—the *Address to the German Nobility*, *The Babylonic Captivity of the Church* and *The Freedom of a Christian Man*. Eventually, Luther was excommunicated, but his answer was to burn the papal bull publicly in the market square of Wittenberg. It was an open defiance to the Pope, and, as has been said, "The Reformation began as the flames consumed the bull."

The Diet of Worms, 1521.—Since the Pope had failed to crush this dangerous heretic by spiritual means, he now appealed to the secular power in the person of the newly-crowned emperor, Charles V. Luther was by him summoned to Worms to face an assembly, or diet, composed of all the chief laymen and prelates of the empire. He was promised a safe-conduct, but his friends, remembering the fate of Huss, urged him

not to go Luther, however, declared his determination to go to Worms "in the face of the gates of hell and the powers of the air." Arrived in the city, he laid his position uncompromisingly before the diet, refusing to retract anything which he had said or written unless it could be found to be contradicted in the Bible. He declared: "I neither can nor will revoke anything seeing that it is not safe or right to act against conscience. God help me Amen"

Charles V ordered Luther to return to Wittenberg there to await the imperial edict declaring him an outlaw and a heretic. But on his return journey Luther was mysteriously spirited away by a party of horsemen in the Thuringian forest, in accordance with a previous arrangement with the elector of Saxony, his patron and friend, and Luther was carried off to the castle of Wartburg where he lived in retirement for about a year, adopting the disguise of a country squire. During this time he wrote and circulated vigorous controversial pamphlets He also translated the New Testament into German. There had been several previous translations, but Luther's version eclipsed them all by its simplicity, its directness and its happy choice of language It became a standard which helped to mould the German literary language Eventually Luther produced a complete translation of the Bible, copies of which were circulated throughout Germany

In 1522, though still outlawed, Luther returned to Wittenberg and there for twenty-four years devoted himself to the writing of Protestant literature—letters, pamphlets, hymns and a catechism. Till his death in 1546 he remained the leader and guide of the great movement of religious reform which he had inaugurated

CHILDREN'S STORY

We are now going to learn about the great religious movement that was taking place in Europe. For more than one thousand years there had been in western Europe one Church, at the head of which was the Pope. For centuries the clergy had been the only educated class of people in western Europe; the clergy had held the highest offices in the State and in the court, education, learning, law and literature were in their hands, and many of the Church estates were very large Regular payments were sent from each country to the Pope's treasury at Rome, and some of the higher officers of the Church were very rich and lived in a grand manner But times were slowly changing Many people had grown tired of the rule of the clergy, they were anxious to control their country's affairs themselves, many resented the regular payment of money to the Pope's treasury, and some coveted the estates and riches of the Church The revival of learning enabled scholars to read the Bible stories as they were written in the Greek language, and some thought that the lives of the clergy and what they taught were not in keeping with the teaching of the New Testament

Perhaps you will remember the name of John Wycliffe, a clergyman who lived during the latter part of the fourteenth century. This man, in his writings and sermons, boldly criticised the clergy of England and the teaching of the Church His followers, called *Lollards*, were suppressed as heretics The teachings of Wycliffe spread to Europe. In Bohemia (a State of Germany) a priest named John Huss made a great stir by attacking the Church, much as Wycliffe had done He was burned at the stake for his heretical opinions, 1415

In those days heretics, that is people who upheld teaching contrary to that of the Church, were looked upon as traitors, and it seemed a Christian duty to compel a heretic to recant lest he should be unable to enter heaven If he persisted in his unholy course then it was thought right that he should be put to death so that he could not lead others into temptation The Church could not shed blood, so it was the duty of the State to have the heretic put to death, most often by fire In medieval times most people saw nothing

wrong in condemning heretics to death, for in those days cruel punishments were inflicted for much slighter offences.

Martin Luther.—On the morning of December 11, 1520, Martin Luther began a great religious revolution when he burned a letter directed against him by the Pope Letters written by the Pope were called *bulls*, because of the leaden *bulla* with which they were sealed It was a daring and extraordinary act to burn a papal bull, and it has been said that "the Reformation began as the flames consumed the bull"

Martin Luther, the son of a German miner, was born in 1483 Although his parents were poor he received a good education. He became a begging scholar and went from door to door to beg for food, as many young scholars did in those days His father hoped that his clever son would become a lawyer, but, to his disappointment, Martin one day announced that he intended to become a monk, and he retired into a monastery

Here at first he was unhappy, for his conscience gave him no rest. He felt that he had done much that was wrong for which he deserved the punishment of God He diligently read the Bible and the writings of the Church Fathers, and after some time he felt that God had forgiven him for his sins, and he was able to be happy and at peace once more. He went on a short visit to Rome where the worldly way in which some of the clergy lived greatly troubled him On his return to Germany he was appointed a teacher at the university of Wittenberg, in Saxony, and there he soon became famous as a rising young lecturer Then an event happened which made him become, unintentionally, a reformer

The Pope was anxious to complete the rebuilding of the great church of Saint Peter at Rome, and he decided to raise money, as many other popes had done before him, by the sale of *indulgences*. An indulgence, according to the teaching of the Church, formed a remission of the temporal punishment due to sin, if the sinner had expressed his repentance and had promised to atone for his misdeeds. Some ignorant people bought these papers, which being written in Latin they could not read, believing that by doing so they were pardoned for all their sins without the need of being sorry for them. Besides this they were glad to help in the good cause of building a noble church. When a Dominican friar named Tetzel came to Wittenberg to sell indulgences, Luther believed that they had a bad effect on some people, and he boldly criticised the sale of indulgences. He wrote down ninety-five theses or propositions which he offered to debate against all opponents In accordance with the custom of scholars in those days, Luther posted his theses on the door of the church where all might see them. The appearance of the paper caused tremendous excitement. Luther suddenly became the talk of the country, for his arguments touched the matter about which many men were thinking, the need for some reforms in the Church. The theses written in Latin were translated into German and rapidly printed. In a fortnight they had spread all over Germany. So great was their effect on the people that very few indulgences could be sold.

The Pope commanded Luther to keep silence, but he refused to do so, and at last the Pope issued a bull against him, ordering him to recant within sixty days or be excommunicated The papal bull did not frighten Luther, he burned it in a great bonfire in the market square of Wittenberg in the presence of a great crowd of students and townsfolk

The Pope now called in the aid of the emperor Charles V., who ruled Germany Charles ordered Luther to appear before an important assembly or diet at Worms on the Rhine On April 17, 1521, Luther bravely faced the emperor, princes, nobles and clergy in the great hall of the diet An eyewitness thus describes the scene· "Charles V was on his throne. Below the throne sat the Pope's two messengers on great crimson velvet chairs Mingled through the hall

could be seen knights from every district in Germany in their steel cuirasses; monks in the various frocks of their orders; Spaniards of the emperor's retinue almost all in coats of yellow silk; lawyers with their books in their hands, magistrates and bishops. The weather was splendid. When the steps of Luther were heard, there fell one of those profound silences when all men hold their breath and the beating of the heart is alone heard. The eyes of that brilliant gathering were turned from the emperor, and fixed on Luther the monk."

For two days Luther boldly held to his opinions. He refused to withdraw anything that he had written On the third day of the discussion Luther was ordered to go back to Wittenberg and there await the emperor's edict declaring him a heretic and an outlaw On his way back he was kidnapped by friends and hidden in a castle. There in hiding and disguise he lived for a year, spending his time in translating the New Testament into German

Later he returned to Wittenberg, but was unmolested, and lived in peace for twenty-four years, during which time he flooded the country with pamphlets and letters. In this way Luther became the guide of the reforming movement which he had accidentally started.

TEACHING HINTS

1. Avignon.—Magnificent ruins of the palace built by the popes during the fourteenth century still stand at Avignon The palace, which took thirty years to complete, is a combination of castle, convent and fortress. It is now in part a national monument and in part a military barrack.

2. The church of St. Peter.—This church is one of the wonders of the world, and perhaps the most stupendous of all. For nearly two hundred years the greatest masters of the Renaissance exerted their genius and exhausted all the resources of their art, while more than forty popes lavished their treasures on this unparalleled sanctuary, which stands on the site of the circus of Nero, where thousands of the first Christians suffered martyrdom. In the year A D 67, according to tradition, St. Peter was executed in the middle of the circus at the foot of the obelisk which now stands in front of his temple. The first basilica to the Apostles was built by Constantine the Great. It lasted for eleven hundred years, when in the middle of the fifteenth century, ruin menacing it, Nicholas V determined on its reconstruction on a more extensive scale Work began in 1450 and continued very slowly for nearly fifty years under succeeding popes until the election of the great Julius II (1503) who had the talent for big undertakings The old basilica was demolished, and in 1506 Pope Julius laid the foundation stone of the new edifice in the presence of thirty-five cardinals Bramante was the first architect. Michelangelo and Raphael were among its decorators. The enormous expense which it involved necessitated special efforts to secure contributions from Christendom, and to this end the sale of indulgences was the peculiar means employed. The church will hold seventy thousand people.

3. Learning.—When children are told of the education of such men as Martin Luther it would be advisable to mention that learning in those days was confined to the few. The ordinary peasant boys and girls had no book learning at all. Let them find on their Time Chart the year 1870 when education for all children in England first became possible.

4. Memory work.—(*a*) For more than one thousand years there had been in western Europe one Church, at the head of which was the Pope. (*b*) The clergy were for centuries the only educated class of people and they held the highest offices in the State and the court (*c*) Many people had

grown tired of the rule of the clergy and many resented paying taxes for the Pope's treasury (*d*) Martin Luther began a great religious revolution when he burned a letter written to him by the Pope (1520)

5. Exercises.—(*a*) Who were the most educated people in Europe before the Renaissance? (*b*) Whom did kings often choose for their chief advisers? (*c*) Who was the head of the Church in western Europe? (*d*) Why did some people want a change in Church matters? (*e*) Why was it a great thing when Wycliffe translated the Bible? (*f*) In what languages was the Bible first written? (*g*) What sometimes happened to people who taught matters which were not like those taught by the Church? (*h*) How long ago did Martin Luther live? (*i*) Where did he live? (*j*) Why did he go to a monastery? (*k*) How did he cause a great stir in the world? (*l*) Who was the king before whom Luther had to go? (*m*) Where did Luther go? (*n*) What happened to him after the meeting? (*o*) Why did he translate the Bible? (*p*) Into what language did he translate it?



MAP OF EUROPE AT THE TIME OF THE REFORMATION IN ENGLAND

XIII. THREE FAMOUS KINGS



From the picture by J Agrasot] [*Photo W F Mansell*

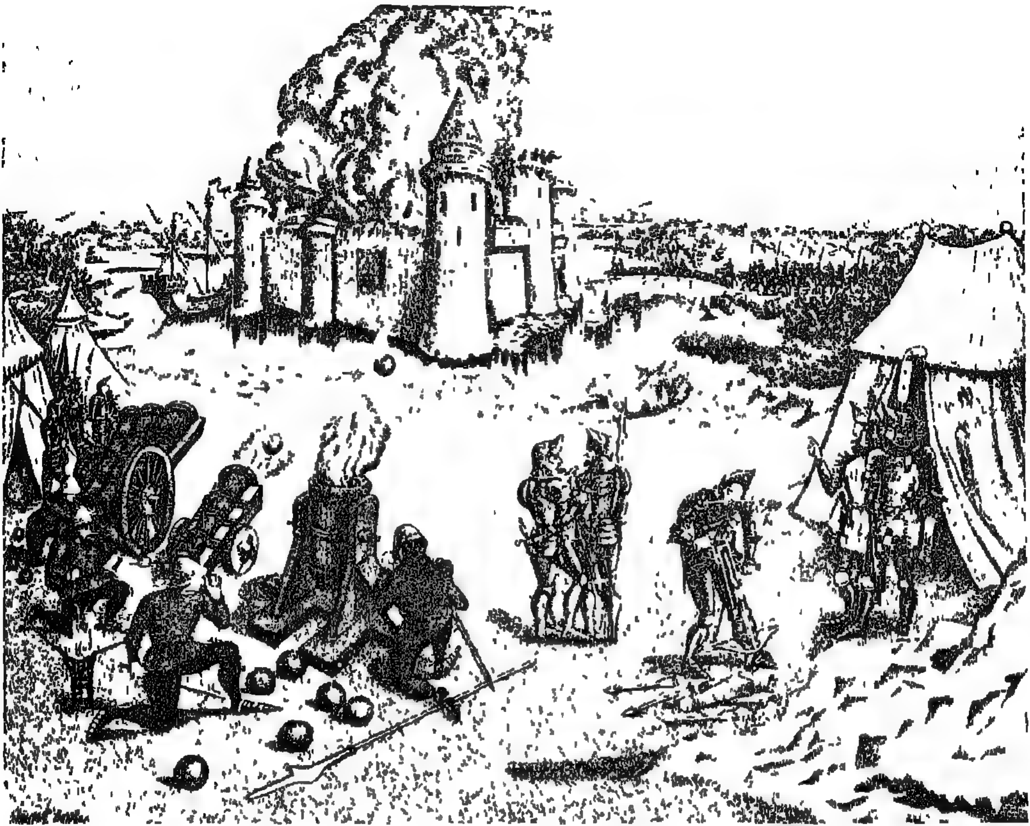
CHARLES V ENTERING A MONASTERY AT YUSTE

TEACHERS wishing to omit this chapter will find a description in the Reference Book of the Class Picture (No 54 in the portfolio) *Cannon in Use at a Siege* A small reproduction of it is given on the opposite page

INTRODUCTION

Charles V. (1500-1558).—Most of Europe at the time of the Reformation was ruled by three young monarchs of striking and forceful personality. These were Charles V, Holy Roman Emperor and (as Charles I) king of Spain, Francis I, king of France, and Henry VIII, king of England These three young men all came to the throne at about the same time, Henry VIII in 1509, Francis I in 1515 and Charles V. in 1519. At their accessions they were aged respectively eighteen, twenty-one and nineteen The attitudes to the reformers, which these kings severally adopted, profoundly influenced the history of Europe

Charles, though the last of the three kings to come to the throne, was nevertheless the most important by reason of the great extent of his territories His parents were Philip of Burgundy, son of the emperor Maximilian, and Joanna, the daughter and heiress of Ferdinand and Isabella of Spain In 1506 Philip died, and Charles succeeded to the county of Burgundy and his father's possessions in the Netherlands Charles's mother, Joanna, queen of Spain, was



CANNON IN USE AT A SIEGE

(Class Picture No. 51, in the portfolio)

insane, and in 1518 he was recognised as king conjointly with her. About this time the emperor Maximilian died, and, in spite of the rivalry of Francis I. of France, Charles secured election to the imperial throne, and was crowned at Aix-la-Chapelle in 1520. Thus at the age of twenty Charles was ruler of an enormous empire comprising Spain, the Netherlands, the German lands which composed the Holy Roman Empire, a large part of Italy, the new colonies in America, and scattered possessions in northern Africa. Charles held no fewer than twenty-five kingdoms and principalities.

The young inheritor of this vast territory had been brought up in the Netherlands, under the strict guardianship of his aunt Margaret, daughter of the emperor Maximilian. He grew up to be a striking looking man with a thin pale face and a protruding jaw. He himself confessed that he was ugly, but he had a fine open brow and clear blue eyes, and he held himself with a dignity which made him appear every inch an emperor. During the first ten years of his reign Charles remained in the background, and appeared as an important figure only on the occasion of his meeting with Luther at the Diet of Worms in 1521. But in 1530 he suddenly asserted his authority, and during the next twenty-eight years, till his abdication, took the leading rôle in European

affairs "No monarch until Napoleon," it has been said, "was so widely seen in Europe and Africa"

Two main problems confronted the young emperor when he thus asserted his intention to rule—war with France and the growth of Lutheranism The rivalry between Charles and Francis, which had begun over the candidature for the imperial throne, continued throughout the greater part of Charles's reign The king of France was naturally alarmed at the increased dimensions of the empire which hemmed in his own kingdom on every side, and he embarked on a series of wars with his formidable rival The struggle broke out again and again In 1525 the imperial troops succeeded in capturing Francis himself and he was forced to undergo a period of captivity Charles was a whole-hearted supporter of Catholicism He set himself to root out the Lutheran heresy from his territories, declaring himself prepared to stake "all his dominions, his friends, his body and blood, his life and soul" on its extinction He might have succeeded in his policy of extirpation had he set about the task immediately, but disorders in Spain and wars in Italy and Hungary necessitated his frequent absence from Germany. His struggle with the French and the Turks, moreover, made him dependent on Lutheran aid When he was at last in a position to combat the Lutherans, they had won too much ground for him to be able to suppress them

Germany had become divided into two parties, the north for the most part embracing the Lutheran or "reformed" religion, while the south remained loyal to the Pope and the Roman Church (This religious division still exists between northern and southern Germany.) The rapid growth of the new doctrines made it necessary to decide what their legal status should be At a diet held in 1526 it was proposed that each state in Germany should direct its own religious affairs as it saw fit. This measure, however, only shelved the question, and three years later the majority of the princes assembled at the next diet decided that the Edict of Worms, outlawing all Lutherans as heretics, should be enforced The Lutheran princes at once drew up a protest against the decision, in consequence of which those who separated from the Roman Church were thenceforward known as *Protestants* (1529)

Fresh trouble with France and invasion of the empire by the Turks, who besieged Vienna, drew Charles away from Germany once more. At the head of his army Charles forced the Turks backwards down the Danube (1532). In 1535 he personally conquered Tunis, he invaded Provence at the head of his troops in 1536, and in person crushed the rebellion of Ghent in 1540 In his last war with Francis, 1542-44, he was within easy reach of Paris when he made the peace of Crépy, 1544.

By 1546 Charles was free to deal with the rising tide of Protestantism. In his absence the Protestant princes and the chief towns which had adopted the reformed religion had formed a league for self-defence known as the Schmalkaldic League (1530) This league Charles now attempted to destroy He brought his Spanish troops into Germany and a civil war began which lasted inconclusively till 1555. In that year a diet met and arranged the Peace of Augsburg By its terms the ruler of each of the three hundred states of Germany was to decide for himself whether his subjects should be Lutherans or Catholics A prince might eject from his principality any subject who would not conform to the religion of the State This arrangement did not lead to complete religious toleration, since all subjects had to believe as their ruler believed or to depart from his dominions, but it recognised Lutheranism as a legal religion in Germany

Wearied with his constant struggles, Charles, at the age of fifty-five, abdicated the throne and retired to the monastery at Yuste, in northern Spain, where, in a little house attached to the monastery, he spent the remaining years of his life, visited by

friends and relatives and by official historians, and intervening from time to time in European affairs.

Francis I. of France (1494-1547) became heir-presumptive to the French throne at the age of four. He was carefully educated, learning Latin and history from his tutor, and Italian and Spanish from his mother, Louise of Savoy. As a boy, Francis showed great fondness for the stories of *King Arthur and his Knights*, and when he reached manhood this passion for the romantic found outlet in tournaments, masquerades and all kinds of entertainments. He had an even greater love of strenuous physical exercise, and delighted in hunting and tennis In person Francis was handsome, in spite of a long and large nose, and his manner was pleasant and courteous. He had many accomplishments, being a brilliant conversationalist, something of a poet, and something of a scholar But, for all this, he had not the depth or strength of character of Charles V Francis was lazy and pleasure-loving, and over-fond of personal adornment and the society of women. He was vacillating, and he tried to compensate for the lack of intelligent will-power by obstinacy.



SEAL, MADE BY BENVENUTO CELLINI, FOR THE TREATY BETWEEN HENRY VIII AND FRANCIS I, 1527

A large, solid gold seal, still attached to the treaty, in the Public Record Office. The obverse, here figured, bears the image and superscription of Francis; the reverse bears the royal arms of France

The greater part of his reign was occupied by the struggle against Charles V. He led a triumphant expedition to Marignano, in

Italy (1515), and gained the reputation of a knightly king He insisted, in spite of warnings, on standing as candidate for the Imperial crown. The election of Charles precipitated a conflict between the two powerful princes Francis, seeking an ally against his great rival, sought the aid of Henry VIII of England. The two monarchs arranged to meet between the French towns of Guines and Ardres at a spot afterwards known, from the splendour of their retinues, as the *Field of the Cloth of Gold* The two princes, each followed by a brilliant company resplendent in silks and jewels, spent twenty days together, feasting and jousting But the interview, which dazzled the eyes of Europe, had no political results. It was merely play-acting on Henry's part, for he had already met Charles V in England and he left the Field of the Cloth of Gold to visit him in the Netherlands When war broke out between the rivals, Henry sent troops to aid the emperor in the wild hope of recovering some of the English possessions in France England, however, gained nothing by the war

In the Italian campaign of 1525 Francis proved a vacillating and useless leader, and he led his army to the disaster of Pavia where, however, he fought with great bravery but was taken prisoner. From prison he wrote to his mother, "Of all things nothing remains to me but honour and life, which is safe" (This was the origin of the phrase "All is lost save honour.")

The Protestant doctrines took a strong hold in France, and the French Protestants came to be known as *Huguenots*. The first French translation of the New Testament appeared in 1523 Persecution began early and in 1535 an edict was published ordering the extermination of the heretics The result was that many French Protestants emigrated to Protestant countries The most famous of these emigrants was John Calvin, who later became the leader in Geneva of that body of Protestants known after him as Calvinists

At first it had seemed as if Francis I. would throw in his lot with the reformers. But the instability and indecision which was part of his nature is to be seen in his dealings with the two religious parties in France. He gave pledges to both sides alternately, at the beginning of his reign favouring the Protestants, but towards its close supporting the Catholics and persecuting the adherents of the reformed religion. The end of his reign was sullied by a massacre of the Waldenses (1545)

Francis greatly strengthened the royal authority in France. He governed by means of a group of favourites without calling together the states-general or taking notice of the protests of the *parlement*. Money was squandered in gratifying the king's prodigality, by innumerable gifts to mistresses and courtiers, and by war expenses and the erection of magnificent buildings He was pre-eminently the king of the Renaissance, and artists and men of letters vied in singing his praises.

Henry VIII. (1509-1547).—The character of Henry VIII. of England presents yet another contrast both to the cold calculation and shrewdness of the emperor, Charles V, and also to the indecision, alternating with obstinacy, of Francis I Henry's main characteristic was ambition, which found an outlet in the determination to make himself supreme in his kingdom

This trait in his character did not immediately appear When he came to the English throne only the attractive side of his nature was visible His good looks, his scholarship, his keen mind, his love of music and literature, his royal bearing, all combined to make him popular, and it was long before the English nation realised the other side of his character. His ingratitude, his cruelty, his selfishness, his sensuality, above all his inordinate lust for power, only became apparent as time went on His subjects learned by bitter experience that in the words of Henry's famous minister, Cardinal Wolsey, "sooner than miss any part of his will, he will endanger one half of his kingdom."



Henry VIII.

From the picture by Holbein at Berkeley Castle.

He inherited from his father vast wealth, and in the early years of his reign he squandered money in reckless extravagance He entered on war with France and Scotland in which at great expense of money he gained the unprofitable victories of Guinegate (the Battle of Spurs) and Flodden (1513). Then he became more prudent and was fortunate in having as his adviser Thomas Wolsey, the "greatest foreign minister that England has produced." By skilful diplomacy Wolsey was able to keep the balance of power between the rival kings Charles V and Francis I, and he raised Henry VIII to a high place of power, making him for a short time the arbiter of Europe Henry's dealings with the Reformation movement in England are briefly told in the next chapter

CHILDREN'S STORY

During the sixteenth century, when the Reformation was taking place, there were in Europe three famous young kings—Charles V., king of Spain and Holy Roman Emperor, Francis I, king of France; and Henry VIII, king of England. These three rulers came to the throne at about the same time, and they were all very young when they began to rule. Henry VIII was eighteen, Charles V. was nineteen and Francis I. was twenty-one years old. The three kings all had to make up their minds whether they would remain Catholics and be loyal to the Pope, or whether they would help the Lutherans, for the followers of Luther were multiplying very quickly in different parts of Europe

Charles V. was the most powerful man in Europe. He held no fewer than twenty-five crowns and principalities and ruled over Germany, the Netherlands, parts of Italy, Spain and all the new colonies which the Spaniards had founded in America He was a fine soldier, very cool in a crisis, and always setting a royal example to his men. On one occasion, when a Lutheran army was bombarding his own, he showed himself so freely that his friends blamed him for carelessly risking his life. "I could not help it," he said. "We were short of men, and I could not set a bad example" Yet, strange to say, he was of a timid nature and was afraid of mice and spiders

Charles was brought up in the Netherlands by a strict aunt. He was a striking looking man He himself said that he was ugly, for he had a thin, pale face and a protruding chin But if he was plain he had a fine open brow and clear bright eyes, and he held himself with a dignity which made him appear every inch an emperor.

Having so many dominions to look after Charles spent a good deal of his time in fighting His greatest rival was Francis I, king of France, who tried to make his kingdom larger by winning lands from Charles Charles led his soldiers in many a fight—in the burning sands of Africa, in far away Hungary where he fought successfully against the Turks, in Spain, the Netherlands and France. So much of Charles's time was given up to fighting during the first years of his reign, that he had little chance of going to Germany to see what the followers of Luther were doing

When a young man of twenty-one he had, you will remember, presided at the Diet of Worms when Luther was brought before him. At last, in 1544, he had made peace with France and was ready to crush the Lutherans, for he had declared that he would sacrifice for the Church all his dominions, his friends, his body and blood, his life and soul Charles, you see, was a staunch Catholic, and he felt it was his Christian duty to prevent any man from breaking away from the Church of Rome. But it was too late. While Charles had been fighting, the Lutherans had grown in larger and larger numbers Nothing could now stop them from believing and worshipping as they wished When Charles ordered the princes of Germany to see that every man in their lands obeyed the Pope, they protested and banded themselves together into a league against him From that time the Church

was split into two bodies, the protesting party or *Protestants* who would not obey the Pope, and the faithful Catholics.

At the age of fifty-five Charles, a disappointed man, worn out with fighting and tired of struggling against heretics within and enemies without, abdicated the throne and left his great tasks to his son Philip and his brother Ferdinand. Charles spent the last years of his life in a little house attached to a Spanish monastery at Yuste, where he passed his time quietly, digging in his garden, feeding his pets, shooting pigeons in the monastery woods, or watching Tarriani, a maker of clocks and mechanical toys. He loved children, flowers, animals and birds, and often amused himself in observing the antics of the court jester and listening to his jokes Now and then he would write fierce letters to his son bidding him crush the Protestants in Spain and the Netherlands, but most of his time he spent in simple country pleasures or in reading or writing books Charles had dearly loved his wife who died before him, and he himself died clasping the crucifix which had belonged to her.

Francis I., king of France, was a very different man from the emperor Charles. He was brought up by a doting mother who gave him everything he wished As a boy Francis loved reading the stories of *King Arthur and his Knights*, and the library of his castle-home was full of such romances. He grew up to be a tall, handsome man, and he gave much of his time to a life of pleasure, hunting, tennis, tournaments and merry-making of all kinds His greatest fault was that he was never able to make up his mind. He could not decide what was the right thing to do and then keep to his decision. The result was that sometimes he would rush headlong into an action that ought never to have been done, and at other times he would waver, and hesitate, unable to make up his mind either way. His great rival was the emperor, Charles, whose wide dominions hemmed France in. Francis wanted to be chosen Holy Roman Emperor, and when Charles was selected instead, Francis went to war with him He tried to win lands in Italy, but although he was a brave fighter he was a poor leader, and at Pavia he was captured and shut up in prison Here he wrote to his mother a letter in which he said, "Of all things nothing remains to me but honour and life"

Francis tried to get the help of Henry of England against Charles, and he invited Henry to France, where he entertained him and his knights on a great plain which, from the richness of the dresses and equipment of those who came to the meeting, came to be known as the *Field of the Cloth of Gold.* The Field lay between two French towns, and the two kings rode from these towns toward each other followed by a long train of followers They were so numerous that two thousand two hundred sheep alone were required to feed them for a month, besides all the other food which was provided A great palace glittering with gold was specially built for King Henry, with a chapel beside it where he might attend service In the fields round it two thousand eight hundred tents were erected for the lords and ladies of his court and their servants.

In this sumptuous way the two monarchs lived for twenty days, passing their time in tournaments, banquets and other entertainments The kings themselves often took part in the tournaments, and tilted against each other They were very evenly matched, for while Francis was the more skilful of the two, Henry had the greater strength. But after spending huge sums of money in this costly entertainment and almost ruining many of the nobles, nothing important came of the meeting, for Henry did not help Francis at that time to fight against Charles

In dealing with the Protestants Francis showed weakness of character At first it seemed as if he would side with the reformers, but later he began to persecute them The Protestants of France came to be called Huguenots, and of these one of the most

famous was John Calvin, who afterwards founded a new sect of reformers at Geneva.

Francis was a very extravagant king and spent vast sums of money on presents to his friends, on rich clothing and banquets, and on building beautiful palaces He became more and more a one-man ruler, for he cared little for the French states-general, and ruled exactly as he thought fit with the help of his favourites We can be sure that there was a good deal of grumbling among the merchants and poor people in Francis's kingdoms, but the rich and well-to-do thought that he was a splendid king, for he did just what they thought a king should do in the wonderful changing times of the re-birth of learning

Henry VIII. (1509-1547) was a handsome young man of eighteen when he ascended the throne. In stature and strength he was superior to all his fellows, his complexion was fair and bright, his auburn hair was combed straight and worn short, his round face was described by a writer as "so very beautiful that it would become a pretty woman" Henry was brought up under the influence of the New Learning Educated by the best teachers, he could speak four languages, play on the harp, lute and organ, sing and compose music An anthem which he composed is still sung in some churches in England to-day Henry delighted in the society of scholars, and it was said that his court had a better store of learned men than any university Henry was also a true English sportsman He could ride better than his grooms, shoot better than the archers of his guard, and was a champion in the tournament. In the Tower of London there is an immense suit of tilting armour which the king wore in the lists He was also a keen hunter, a tennis player and a yachtsman. Henry had a ready smile and jest for everyone, yet he knew how to keep his royal dignity. In the first years of his reign he freely spent in sport and costly entertainment the riches which his father had saved The English people loved and admired their handsome and skilful king. Someone writing of him said, "If you could see how the world here is rejoicing in the possession of so great a prince you would not contain your tears for joy"

Henry was ambitious, and he aspired to be a famous king He was fortunate in having for his chief minister a notable churchman called Thomas Wolsey Wolsey rose to the highest offices in the Church and State He obtained the lofty rank of cardinal from the Pope and was the king's lord chancellor. Next to the king Cardinal Wolsey was the most important person in the kingdom. He was enormously rich A train of prelates and nobles followed him wherever he moved; his household was composed of five hundred persons of high birth, and its chief posts were held by knights and barons of the realm Cardinal Wolsey was a faithful minister to Henry, he worked exceedingly hard, and did all in his power to make Henry a great and famous king We shall hear in the next lesson how Henry treated Wolsey, and how Henry dealt with the Reformation in England

TEACHING HINTS

1. Lord Chancellor.—The chief officer in the State, the Keeper of the Great Seal Sir Thomas More, who held the office after the death of Wolsey, was the first chancellor who was not a clergyman The chancellor at the present day sits on the Woolsack—a reminder of the importance of the wool trade in early times

2. Cardinal Wolsey.—In 1514 Wolsey was appointed archbishop of York, the next year he obtained the lofty rank of cardinal from the Pope, and before the end of the year he was Henry's lord chancellor. In addition to other offices he was dean of Lincoln, bishop of Bath and Wells, of Winchester and of Durham, abbot of St Alban's monastery and parish priest of several villages The revenue from his

offices, and the many gifts and favours that he received, made him enormously rich Two of his palaces, Hampton Court and York House (afterwards known as Whitehall), later served as royal palaces He founded Cardinal's College (now Christ Church) at Oxford

(There is a description of Hampton Court in Volume VI, page 260, under the general title of "Royal Residences")

3. The Reformation in other lands.—*Switzerland* The Reformation in Switzerland was initiated independently at Zurich by *Zwingli* (1484–1531), a classical scholar and teacher who proclaimed the Bible to be the sole basis of faith The result of his teaching was a cleavage in the nation which still persists to this day, part of Switzerland remaining Catholic while the rest became Protestant Another sect of reformers was founded by *John Calvin* (1509-1564) who has been called the "Protestant pope" In Geneva, where he settled in 1536, he established a Protestant republic which he ruled on a religious basis with a rod of iron His influence was not confined to Geneva The men whom he trained as pastors and teachers carried the example of his stern, God-fearing and upright character all over Europe The Calvinistic doctrines found favour, especially in France, and in Scotland, where they were preached by John Knox, "the Scottish Calvin"

The Dutch Netherlands (the modern Holland) became mainly Calvinistic in religion, and the reformed doctrines spread rapidly in spite of the rigorous persecutions of heresy by the successive emperors who held both the Dutch and the Belgian Netherlands as part of their empire

Scandinavia The rulers of Denmark, Sweden and Norway adopted the reformed religion, closed many monasteries, seized church lands and made Protestantism the official religion of the three countries

Spain The Protestant doctrines at first spread rapidly in Spain Many of the emperor Charles V's court dignitaries were in sympathy with them and several were executed after his death for heresy But Protestantism was ruthlessly stamped out by the tribunal known as the Inquisition which operated with extreme severity in Spain.

In *Italy*, as in Spain, the Protestants were crushed by the Inquisition, and Catholicism reigned supreme in the peninsula.

4. Memory work.—(*a*) At the beginning of the Reformation there were three famous young kings in Europe; Charles V, king of Spain and Holy Roman Emperor, Francis I., king of France, and Henry VIII., king of England (*b*) Charles and Francis were for many years at war with each other. (*c*) Charles tried to put down Lutheranism, but the princes in certain parts of his empire protested and they became known as Protestants (*d*) Francis tried to put down the Huguenots in France (*e*) Henry's chief minister was Cardinal Wolsey.

5. Exercises.—(*a*) In what century did the Reformation take place in Europe? (*b*) Why was Charles V. a most important emperor? (*c*) How do we know that he was a brave man? (*d*) What did the reformers in Germany do when Charles ordered them to obey the Pope? (*e*) What was a Protestant? (*f*) Why did Charles V abdicate the throne? (*g*) How did he spend the last years of his life? (*h*) How did Francis I. enjoy himself as a young man? (*i*) What did he say when he was taken prisoner? (*j*) What happened at the *Field of the Cloth of Gold*? (*k*) What is an *absolute* monarch? (*l*) Why did the rich men praise Francis I? (*m*) Why did the poor men grumble at Francis's doings? (*n*) Why was Henry VIII as a young man so pleasing to the English? (*o*) Who was his chief minister?



XIV. SIR THOMAS MORE

PICTURE REFERENCE



HENRY VIII PRESENTING BIBLES
(Class Picture No 55 in the portfolio)

INTRODUCTION

The Reformation in England.—Although Henry VIII. came to the throne in 1509 the breach between him and the Pope did not begin to show itself openly till 1533, when the question was raised of the annulment of Henry's marriage with Katharine of Aragon Prior to this date he had shown himself a good Catholic, had expressed his abhorrence of Luther and his doctrines, and had even written a book attacking him He presented a copy of it to the Pope, who rewarded the royal author for his devotion by bestowing on him the title of *Fidei Defensor*, or "Defender of the Faith"

The forces of the Reformation were nevertheless at work in England In 1530 *William Tyndale* published his English translation of the Bible. Born about 1492, and a scholar at both Oxford and Cambridge, he became chaplain and tutor to a noble family in Gloucestershire There he came into conflict with the backward country



HENRY VIII IN PARLIAMENT

From a contemporary print in the British Museum

clergy, and he so shamed them by his superior ability and knowledge that he aroused their hostility and was compelled to leave the neighbourhood. Tyndale thought that the only way to open men's eyes to the needs of the Church was to translate the New Testament into English. He laid his plans before the bishop of London, but met with a cold reception. It became plain to him "not only that there was no roume in my lord of London's palace to translate the New Testament, but also that there was no place to do it in all Englonde." Soon after this rebuff Tyndale sailed for Hamburg (1524), he visited Luther at Wittenberg, and then went on to Cologne, where he made some progress with his printing. Only ten sheets were printed when the work was discovered and stopped. Tyndale, however, escaped farther up the Rhine to Worms, and there the printing was finished. Henry VIII and Cardinal Wolsey had been warned of the work that was in progress, and Henry, as a loyal son of the Church, had given orders prohibiting the importation of Tyndale's Bible. Copies, however, were secretly smuggled into England and eagerly bought and read. Wherever the Bibles were discovered, they were confiscated and burnt. At Marburg Tyndale continued his work of writing, translating the Old Testament and printing. In 1535 he was arrested by the emperor's orders, tried for heresy, condemned, and in 1536 strangled and burnt at the stake. Tyndale was one of the greatest forces of the English Reformation, and his translation of the Bible formed the basis of much of the Authorised Version.

The break between Rome and England.—The actual break between the Roman and the English Church was the act of a despotic sovereign. Henry VIII. had married his brother's widow, Katharine of Aragon, and as such a union was not permitted by canon law he had obtained from the Pope a special dispensation for the marriage. After living with Katharine for eighteen years, Henry suddenly declared that he believed the union to be sinful. This announcement was in reality only a pretext for the annulment which he desired. Katharine had had several children, but only one, a daughter, afterwards Queen Mary Tudor, had survived infancy, and there was no son and heir to succeed to the throne. Henry felt that the death of his children was a sign of divine displeasure. Moreover, Henry's fancy had alighted on Anne Boleyn, a waiting-maid at court, and he wished to be free to marry her.

The Pope, however, was unwilling to consent to the divorce. To do so would mean setting aside the decision of a predecessor, and also incurring the anger of the queen's powerful nephew, the Emperor Charles V. Cardinal Wolsey, partly because he failed to persuade the Pope to annul the marriage, fell from power, was deprived of all his offices, and died in disgrace in 1530.

A new counsellor and favourite appeared in Thomas Cromwell, an astute man, who suggested to Henry that he should repudiate the Pope's authority and settle the matter in his own courts. Acting on this advice, which corresponded exactly with his own wishes, Henry instructed the new archbishop of Canterbury, Thomas Cranmer, to declare the marriage invalid, and Anne Boleyn, whom he had already married, was crowned queen in 1533.

This high-handed action inevitably brought down on Henry the papal condemnation. But he had gone too far to turn back. The noted *Reformation Parliament*, which sat from 1529 to 1536, passed an Act of Supremacy (1534) by which Henry was declared "The only Supreme Head on Earth of the Church of England." The king

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[By permission of Messrs Louis Wolff & Co, Ltd, the owners of the copyright and the publishers of the large engraving

EVICTED

From the picture by E Blair Leighton

was now supreme in his realm Parliament also passed a *Treason Act* which made it treason to speak, as well as do, anything against the king, queen or royal family From that time anyone who denied that the king was Supreme Head was liable to a traitor's death Some notable men, however, refused to be terrorised into acknowledging the king in place of the Pope as Head of the Church. Among them were John Fisher, bishop of Rochester, and Sir Thomas More, who were both executed, 1535

The suppression of the monasteries soon followed the separation from Rome (1536-40) Henry also caused a translation of the Scriptures, the "Great" Bible, to be placed

in every church, for since he based his whole position on the authority of the Bible it was necessary that his subjects should be able to prove his claims for themselves. But by this time, Henry had gone as far as he intended with the Reformation in England. He was still a Catholic in doctrine, and he had no sympathy with the Lutherans or reformers On finding that the public reading of the Bible led to heresy, he caused parliament to pass a *Statute of Six Articles* (1539) which commanded all men to hold the Catholic faith under pain of heavy penalties For the remaining seven years of his reign Protestants who denied the Six Articles and Catholics who refused to recognise his supremacy were impartially put to death—the Protestants burnt as heretics, the Catholics hanged as traitors

Sir Thomas More (1478-1535).—A notable victim of the English Reformation was one of the foremost men in the country, Sir Thomas More, Henry's lord chancellor and an English humanist of European reputation for his piety, his profound learning and his eloquent speech He was the son of a London lawyer, and was born in Milk Street, Cheapside After learning the rudiments of education at St. Anthony's School, in Threadneedle Street he was placed as a page in the household of Cardinal Morton, who observed his ability and predicted a great future for the boy. At the age of about fourteen More was sent to Oxford, where he studied under the great humanists of the time He learned Greek in particular, but this study was looked upon askance by the authorities as likely to lead to new and dangerous doctrines, and his father in alarm recalled him from Oxford and set him to study law in London (1496). The young man did well in his profession but managed to continue the studies he had begun at Oxford, and we find him lecturing on the classics to "all the chief learned of the city of London" At the age of twenty he gave himself over to an ascetic life and subjected himself to the discipline of a Carthusian monk. He wore a hair shirt, allowed himself little food, slept on the bare ground with a log under his head, and scourged himself every Friday. These extreme manifestations of devotion lasted for about four years, but throughout his life More was noted for his piety and for the long hours which he spent in prayer and meditation.

More made the acquaintance of *Erasmus*, the great Renaissance scholar from Holland of whom it has been said, "He laid the egg of the Reformation and Luther hatched it." Erasmus has left us many descriptions of More whom he loved from the first "When," he asks, "did Nature mould a temper more gentle and happy than the temper of Thomas More?"

His scholarly pursuits did not prevent More from rising in his profession. He sat in the parliament of 1504 and came into public notice as a result of his courageous opposition to Henry VII.'s exorbitant demands for money. As a result he was obliged for a time to go into retirement He married, settled at Chelsea with his wife and family and continued to practise as a lawyer, in which capacity his fame continually increased His ability soon attracted the attention of the young king Henry VIII and he was taken into the royal service with the open resolve "first to look to God, and after God to the king." Henry showed More increasing favour. In 1518 he became a privy councillor, and he would often be sent for to the king's closet, where the two men discoursed for hours on astronomy, geography and divinity. More did not desire this favour, for he saw the danger in it, and he was reluctant to go to court. "No one ever struggled harder to gain admission there," says Erasmus, "than More struggled to escape" But the king was bent on surrounding himself with the most capable men in his kingdom, he insisted that More should make one of them, and then he valued him so highly, both as a companion and a privy councillor, that he would scarcely let him out of his sight When Henry's great minister, Wolsey, fell from



THE MORE FAMILY

A miniature painted late in the sixteenth or early in the seventeenth century, for Thomas More, grandson of the chancellor The left hand portion is an authentic representation of Sir John More (father of Sir Thomas) in his judge's robes, of Sir Thomas himself, his three daughters his only son John, and John's wife, Anne Cresacre (who stands behind her father in-law) To this group the painter of the miniature, in defiance of dates, has added a second, consisting of John More's son Thomas, his wife Mary Scrope, and two of their sons

power in 1529, More was made lord chancellor in his place, and was thus drawn more and more into public affairs, so that he was able to spend little time with his family.

This was a great sorrow to him, for the home at Chelsea was very dear to him and was famous for its domestic happiness. To quote Erasmus again—"More has built, near London, upon the Thames, a modest yet commodious mansion There he lives surrounded by his numerous family including his wife, his son, and his son's wife, his three daughters, and their husbands, with eleven grandchildren There is not any man living so affectionate to his children as he, and he loveth his old wife as if she were a girl of fifteen Such is the excellence of his disposition that whatsoever happeneth that could not be helped, he is as cheerful and as

well pleased as if the best thing possible had been done . . The house at Chelsea is a veritable school of Christian religion. In it is none, man or woman, but readeth or studieth the liberal arts, yet is their chief care of piety There is never anyone idle, the head of the house governs it not by a lofty carriage or oft (frequent) rebukes, but by gentleness and amiable manners Every member is busy in his place, performing his duty with alacrity, nor is sober mirth wanting."

Of all this numerous household, the favourite of Sir Thomas More was his eldest daughter, Margaret, who married a Mr Roper She ranks high among the famous women of England for her high intelligence, her accomplishments and her tender devotion to her father. She read Greek and Latin, had great musical ability and studied the science of the time The love between father and child has become a classic. "She gave him not only the tender affection of a daughter, but the high-minded sympathy of a soul great as his own"

Henry had made More lord chancellor in the hope that he would support him in his ambitious schemes. This hope was soon disappointed More would show no approval of Henry's plans for divorce, and when he saw that the marriage with Anne Boleyn was determined on, he petitioned to be allowed to resign his chancellorship This he did in 1532, and relinquished office, as he had entered it, a poor man, with an income not exceeding £100 a year Parliament voted him £5,000, but he refused it. He retired into private life, managing out of his slender means to provide for his large establishment as best he could "If our purses stretch not to maintain us," he said merrily, "then may we with bag and wallet go a-begging together, hoping that for pity some good folks will give us their charity."

More was, however, too important a man to be allowed to enjoy private life for long. He was invited to the coronation of Anne Boleyn, and a special grant of £20 accompanied the invitation, to buy the ex-chancellor new clothes for the ceremony! But More, true to his principles, refused both invitation and grant, and from that day his fate was certain He was summoned by the privy council on a charge of receiving bribes in the administration of justice, a charge which was easily refuted Then an absurd charge of treason was trumped up against him but could not be sustained When he heard the news of his acquittal More said calmly, "That which is postponed is not dropped"

The king's chance of vengeance soon came with the passing of the *Act of Supremacy* More was summoned to Lambeth to take the oath. He offered to swear to the succession, but refused the oath of supremacy as against his conscience. He was imprisoned in the Tower for over a year, and at the end of this time, much weakened by his imprisonment, he was brought to trial, and would even then have been acquitted but that the solicitor-general having been sworn as a witness for the Crown described a treasonable conversation which he claimed to have held with More in the Tower. On this act of perjury he was found guilty of treason and condemned to death The sentence, originally the horrible traitor's death of hanging, drawing and quartering, was commuted by the king to beheading, and was carried out on July 7, 1535. More's will was set aside, his family expelled from Chelsea, and his small property confiscated and bestowed on Princess Elizabeth (later queen) Then only was the king's vengeance satisfied on his servant and friend.

The execution of Sir Thomas More sent a thrill of horror throughout Europe His reputation as scholar, lawyer, statesman, writer and man of culture was known all over the continent, and his piety was such that a later Pope bestowed on him the title of "the Blessed" Sir Thomas More is best known to us to-day as the author of *Utopia*, a description of the ideal state as More conceived it.

CHILDREN'S STORY

Henry VIII was a king who was determined always to have his own way. Sir Thomas More, the king's counsellor and friend, once said to a minister who was about to enter the king's service, "You are now entering the service of a most noble, wise and liberal prince. You should, in your counsel-giving, ever tell him what he ought to do, and never what he is able to do For if a lion knew his own strength, hard were it for any man to rule him" This was true If once Henry had set his mind to anything, nothing would hold him back.

About the middle of his reign Henry wished to separate from his Queen and marry another woman, and he asked his great minister Cardinal Wolsey to get the Pope to allow this to take place. The Pope refused his consent. Henry was extremely angry with Wolsey for having failed to get the Pope's consent. He dismissed Wolsey from all his offices, his rich estates were seized and he was reduced to poverty. Soon afterwards he died

Henry now resolved that he, instead of the Pope, should be head of the Church in England. Parliament was called, and an Act was passed which made Henry Supreme Head on Earth of the Church of England Then a *Treason Act* was passed, any man who would not acknowledge Henry as the head of the Church was declared a traitor, and he might be executed Thus in England the Reformation came about in a very different way from that in Germany and France Henry was still a Catholic in doctrine, he hated the Lutherans and reformers, and when he had got his own way and had become supreme in both the Church and State, he expected everybody to go on believing and worshipping exactly as they had done before. Many people in England were glad to have Henry as head of the Church, but others refused to acknowledge him as such Among these was Sir Thomas More, who suffered a traitor's death for conscience' sake The story of this good man is very interesting

Sir Thomas More was wise and learned, and much loved by his friends, one of whom called him "the most delightful man in England" He was a lawyer's son, born in London in 1478, and was sent to St Anthony's Free School in Threadneedle Street, at that time the best school in London. There he gained the thorough knowledge of Latin which, as we have seen in the story of Caxton, was necessary to anyone who wished to be a scholar

When Thomas was about thirteen years old he became a page in the household of Cardinal Morton, archbishop of Canterbury By his good sense and good behaviour he won the approval of the cardinal, who said one day at dinner, "This child here waiting at the table, whoever shall live to see it, will prove a marvellous man"

When he was old enough, he was sent to Oxford university, but after he had been there some time his father decided that he wished Thomas to be a lawyer and sent for him to London to study law About this time he met Erasmus, a noted scholar of the day, who became his greatest friend He has left us a vivid description of More's appearance in later life. "He is of middle height," he says, "well-shaped, complexion pale. His hair is black shot with yellow, or yellow shot with black, beard scanty, eyes grey with dark spots—an eye supposed in England to indicate genius, and never to be found except in remarkable men"

When More married he and his wife took a house in Chelsea, then a country village, and this house became one of the happiest homes in England Erasmus, who was a frequent visitor there, tells us of More at home "He is fond of animals," he says, "and likes to watch their habits All the birds in Chelsea come to him to be fed, and he has various tame animals—a monkey, a fox, a ferret, and a weasel. He rules his family with an easy hand—no quarrels. He has never made an enemy, nor become

an enemy. His whole house breathes happiness, and no one enters it who is not the better for the visit."

Sir Thomas had four children, a boy and three girls. He was very fond of his three little daughters and shared in their play. "He was as fond of their pets and games," we are told, "as the children themselves, and would take grave scholars and statesmen into the garden to see his girls' rabbit hutches, or to watch the gambols of their favourite monkey" His especial favourite was his eldest daughter, Margaret, or "Meg," as he liked to call her She understood her father best of them all, and loved the books and music which were so dear to him She was a clever and thoughtful girl who had learned to read Latin and Greek, and could play beautifully on the lute and harpsichord

When Henry VIII came to the throne More became one of his chief advisers The king and More were fond of each other, and Henry would visit the home at Chelsea, and walk round the garden after dinner with his arm round his favourite's neck

When Henry dismissed his lord chancellor, Cardinal Wolsey, the king appointed More to the office But More knew it was a dangerous thing to serve under such a wilful king.

How trouble came.—Sir Thomas did not trust too much to the royal favour, or believe that it would last "If my head would win the king a castle in France," he said once, "it would not fail to go" Soon, as he had feared, trouble did indeed come to the happy Chelsea home. More disagreed with the king on the matter of religion, and this disagreement grew into a quarrel, with a tragic ending

Sir Thomas was a good Catholic and a pious man. He had had his own private chapel built at a distance from his house, and would sometimes spend a whole day there alone in prayer and meditation He was intensely loyal to the Church and the Pope, and had no sympathy with the followers of Luther.

When Henry wished to become head of the Church, More felt bound to disagree with his master, and he asked to be removed from the chancellorship Henry was very angry, but he allowed Sir Thomas to retire to his home in Chelsea The loss of all his important offices made him a poor man, with less than £100 a year Parliament wished to make him a present of £5,000, but he proudly refused the gift "I had rather see it all cast into the Thames," he declared

In 1534, when all English subjects were required to take the oath acknowledging Henry as head of the Church of England, More felt that he could not take this oath, because to him the Pope was the true Head of the Church He knew, on the other hand, that if he did not take it he would be put to death, and this made it hard to refuse As he went in a boat on the river Thames, on the way from his pleasant Chelsea home to the archbishop's palace at Lambeth where the oath was to be taken, he sat for a while in silent thought Then, turning to his son-in-law who sat beside him, he said, "I thank my Lord the field is won" He meant that he had conquered the temptation to give way, and would do what he felt to be right even at the risk of his life

All happened as he had feared He was asked to take the oath, and when he refused was arrested and imprisoned in the Tower, where he remained for fourteen weary months The governor of the Tower, however, was his friend, and did all he could to make the fallen chancellor comfortable

"I am sorry," he said one day, "that your life is so comfortless"

"Mr Lieutenant," answered More brightly, "I heartily thank you, and assure you I do not mislikè your cheer But whenever I do so," he added with a merry twinkle in his eye, "then thrust me out of your doors!"

Many friends came to visit More in prison, and urged him to take the oath His wife thought him foolish to refuse. "I marvel," she said, "that you who have hitherto been taken for a wise man will now

so play the fool as to lie here in this close, filthy prison, and be content thus to be shut up among mice and rats when you might be abroad at your liberty, and with the favour and good will both of the king and his council, if you would but do as all the bishops and best learned of the realm have done" But More answered that it was against his conscience to call a man who was not a clergyman the head of the Church "Besides," he added, "I am surely as near to heaven in the Tower as in Chelsea"

At last More was brought to trial and condemned to death for high treason On July 9, 1535, Sir Thomas was led forth to execution To the last he showed his high courage and his merry heart He came to the scaffold, on which stood the block, with the headsman beside it leaning on the handle of his axe The platform had been badly erected, and shook as he placed his foot on the ladder. "See me safely up," he said gaily "For my coming down I can shift for myself"

Many notable people in other lands than England were horrified to hear of the execution of Sir Thomas More The emperor Charles V said, "If I had been master of such a servant, I would rather have lost the best city of my dominions than have lost such a worthy councillor."

TEACHING HINTS

1. The dissolution of monasteries.—The Class Picture No 34 should be referred to in this connection Cromwell was resolved to put an end to the monastic system in England, and with the spoils to make Henry "the richest king that had ever been in England" Henry appointed Cromwell Vicar-General, thus making him chief minister of the Church as well as of the State Commissioners were sent round the country to examine the state of the monasteries Their reports on most of them were unfavourable Doubtless the reports were highly exaggerated, but the Reformation Parliament was satisfied, and the smaller monasteries, to the number of three hundred and seventy-six, were closed, 1536 In 1539 a new parliament passed an act for the dissolution of all monasteries All the money, the gold and silver vessels were sent to the royal treasury; the bells were broken up to be re-cast into cannon, the lead was stripped from the roofs, and the beautiful carved woodwork was burnt to melt down the lead Windows, doors, timber and tiles were sold to any purchaser, or broken and destroyed. The massive walls were left in ruins for any one to use the stones for building houses The monastery lands were handed over to the king, and in many cases he gave or sold them to country gentlemen to add to their estates A part of the money was used on shipbuilding and for strengthening the coast defences, and a small portion on the foundation of five new bishoprics The monks and nuns were pensioned off Some abbots who refused to obey the royal commands were hanged, some monks went abroad to find new homes in foreign monasteries, some remained to work as clergymen, some gave up their religious life and worked as ordinary people In many parts of England ruins of the monasteries can still be seen In many cathedrals and churches there were famous shrines and altars rich with the offerings of pilgrims. These were also destroyed, and their wealth added to the king's treasury From the famous shrine of St. Thomas à Becket, at Canterbury, it is said that twenty-six cart-loads of treasure, jewels and gold were taken

2. Royal Navy.—The following note is not quite relevant to this lesson, but it is well to bear it in mind in connection with a subsequent lesson on "The Great Armada" Henry VIII. was the first English king to make a real effort to form a large and efficient Royal Navy. Before Tudor times the few merchant ships had been used in times of war, but Henry VIII. not only built fighting ships carrying guns, but in the last year of his reign, 1545, he formed the

Navy Board, which consisted of certain officers whose business it was to attend to the building, equipment and repair of all royal ships. Thus "the year 1545 best marks the birth of the English naval power" Henry VII had bought a piece of land at Portsmouth to form a dockyard, he had built two large ships, the *Regent* and the *Sovereign*, and he had encouraged merchants by paying them bounties to build ships which could be used for war The *Regent*, the finest ship which England had then possessed, had been burnt in a fight with the French fleet off the coast of Brittany. Henry VIII. determined to have in its stead a yet finer ship, and the *Henry Grace-à-Dieu*, or the *Royal Harry*, as it is often called, was built This ship carried three hundred and forty-nine soldiers, three hundred and one mariners and fifty gunners, and was so splendid that it was said "the like had never been seen in England" Henry was very proud of this ship When he went to launch it, in 1514, he wore a dress cut like a seaman's but made of cloth of gold, and he had a great gold whistle which "he blew nearly as loud as a trumpet." The plunder Henry had gained from the Church enabled him to spend money on a large scale. Italian workmen were brought over to improve shipbuilding, and it is estimated that at the end of his reign Henry's navy consisted of fifty-three vessels, carrying two hundred and thirty-seven brass guns and one thousand eight hundred and forty-eight of iron. Most of these ships were built at Portsmouth, or at the new dockyards of Deptford and Woolwich.

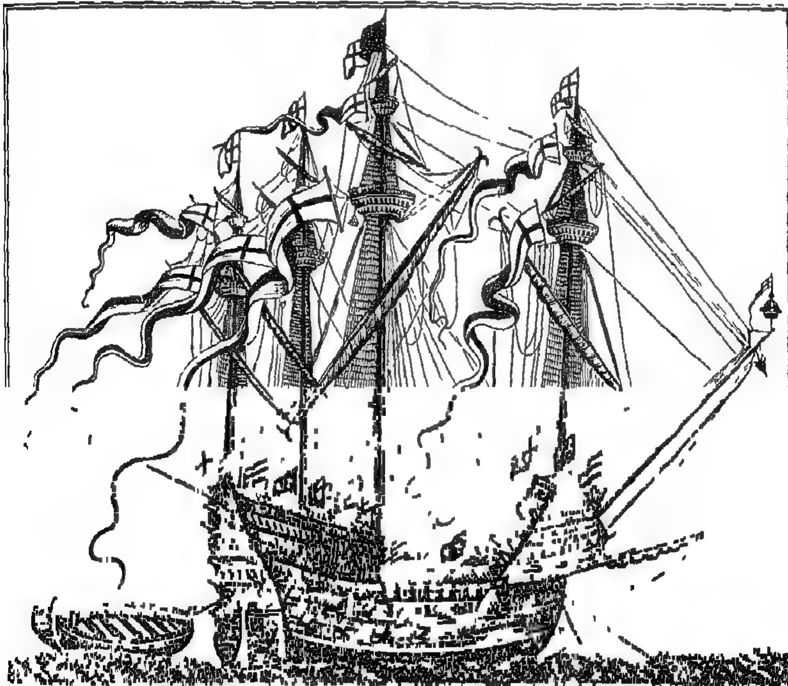
3. The work of Henry.—As the "Children's Stories" are necessarily concerned with only episodes in history it is advisable, now and then, to explain certain matters a little more fully in order to prevent children from gaining wrong impressions. In this lesson it might be as well to explain that Henry did great things for England In a remarkable way he altered the religious policy of the country and gave his subjects the English Bible He laid the foundations of the navy He kept peace within the realm and extended royal justice to the whole of England and Wales He consulted parliament so freely that much of its future growth was due to the encouragement given by him To his last parliament he said, "Now, since I find such kindness on your part towards me, I cannot choose but love and favour you, affirming that no prince in the world more favoureth his subjects than I do you, nor no subjects or Commons more love and obey their sovereign lord than I perceive you do." Henry had boundless faith in himself. The religious changes had thrown an almost sacred character over the *majesty* of the king, for he was acknowledged Head of the Church. He alone could say what creed men might or might not profess, the clergy could preach only what he wished them to say, half of their wealth went to the royal treasury. It is little wonder that his faults were overlooked by the nation as a whole Great changes were taking place throughout Europe, and England needed a strong, despotic king to hold the nation together and prevent civil war The king was the head of the nation, so long as the people held fast by the king the nation felt secure Henry could be merciless, cruel and selfish, he could have his wives, or nobles, or clergy, or ministers beheaded, for everything that was done men believed was done for the good of the nation, and they were content.

4. The Tower.—There is a Class Picture of the Thames and Tower Bridge, No 115 in the portfolio, and there is an account of the Tower in Volume VI—"General Knowledge," London, page 266

5. Memory work.—(*a*) Henry VIII was a king who was determined always to have his own way. (*b*) When the Pope refused to let Henry repudiate his queen, he got the parliament to declare that he was the supreme head of the Church of England, to the exclusion of the Pope (*c*) Sir Thomas

More was a wise, learned and lovable man (d) He refused to acknowledge Henry as head of the Church of England and was beheaded, 1535.

6. Exercises.—(a) What is a cardinal? (b) How did Cardinal Wolsey lose Henry's favour? (c) Why did Henry wish to become head of the Church of England? (d) Why did he get parliament to pass the Act of Supremacy? (e) Sir Thomas More was born in 1478 How long ago was that? (f) What was More's profession? (g) How do we know that he was a clever man? (h) What would a Tudor boy have specially enjoyed when visiting More's house? (i) How did the king show that he was fond of More? (j) How do we know that More was a pious man? (k) What did More mean by the words, "I thank my Lord the field is won"? (l) How do we know that More was courageous? (m) What good joke did he make with the governor of the Tower? (n) What joke did he make just before he died?



SHIP, "HARRY GRACE-À-DIEU" BUILT FOR HENRY VIII, 1512

Anthony's "Declaration of the Royal Navy," 1546, MS in Pepys' Library, Magdalen College, Cambridge

XV. SAINT IGNATIUS OF LOYOLA



SAINT IGNATIUS OF LOYOLA
From the picture by Cœllo, in the House of the Jesuits at Madrid

INTRODUCTION

The Catholic Counter-Reformation.—By the middle of the sixteenth century Protestantism had spread through northern Europe and had menaced Austria, Spain and even Italy in the south The popes and dignitaries of the Church of Rome set themselves to

defend their threatened faith and to achieve reform. The Catholic reaction dates from the time of Pope Paul III who was in office from 1534 to 1549. He appointed Catholic reformers to the college of cardinals and even offered a place in it to Erasmus

One great agency in this reform was the celebrated General Council of the Church which was convened by the Pope at Trent, a town in the Tyrol The aim of the Council was to settle once for all the religious disputes of the Reformation by re-formulating the doctrines of the Church, and to effect a reform of ecclesiastical abuses. The Council, which met intermittently for eighteen years under various popes declared that the Church had equal authority with the Bible, and that the Pope was supreme in Christendom These were the two great issues on which the Church and the Protestants had split, and the stand taken by the Council made reconciliation between the Catholics and Protestants thenceforward impossible To check the spread of heretical doctrines a list was drawn up, known as the "Index," in which were entered all the books condemned as heretical and therefore forbidden to all faithful Catholics. In order to reform some of the abuses of the Church, the council passed decrees prohibiting the sale of ecclesiastical offices, and ordering bishops to reside in their own dioceses, to attend strictly to their duties and to superintend their clergy. The effect of these reforms was to make the Church more exclusively a religious organisation, to raise the standard of life and to heighten the sense of responsibility among the clergy

Another question which engaged the attention of the Council was the extirpation of heresy by means of the *Inquisition*, a system of Church courts for the discovery and punishment of heresy. The Inquisition was established in most European countries and was especially strong in Spain, where it became notorious for its severity. In Italy it was successful in stamping out the effects of the Reformation; in France the massacre of St Bartholomew (1572) and a succession of religious wars broke up the Huguenot organisation But in the Teutonic countries its establishment only led to fiercer outbursts of Protestant zeal, and the Counter-Reformation definitely failed in Northern Germany, Scandinavia, the Netherlands, England and Scotland.

St. Ignatius of Loyola (1491-1556).—New religious orders were organised, pledged to fight for the faith The most notable among these was the *Society of Jesus* founded by Ignatius of Loyola, a Spanish nobleman (His Spanish name was Inigo Lopez de Recalde) He was born on December 24, at the castle of Loyola, on the river Urola, in northern Spain, and he was the youngest of a family of thirteen. After a rudimentary education he was sent as a page to the court of Ferdinand and Isabella, and he afterwards took service with a Spanish duke and became a soldier of fortune In 1521, while defending a town besieged by the French, his legs were struck by a cannon ball, and the injury he received left him a cripple for the rest of his days. During his convalescence he read two books, a Castilian translation of the *Life of Christ*, by Ludolphus of Saxony, and a series of biographies known as *The Flowers of the Saints* The reading of these volumes brought about in him a change of heart He renounced the life of the world and devoted his martial enthusiasm to the service of God and the Church

As soon as he had recovered strength, Loyola set out on a pilgrimage to the Benedictine abbey of Montserrat. On his way thither he was nearly turned from his purpose by an encounter with a Moor, who worsted him in argument and rode off, leaving Loyola deeply humiliated He was minded to pursue the Moor and take a knightly vengeance for the insult, but his mule, to whom he left the choice of the path he should take, brought him to the abbey Here, in imitation of the heroes of his favourite chivalric romances, he spent an all-night vigil in the abbey church and next

day, putting off his worldly attire and laying his sword and dagger on the altar, he robed himself in the rough garb of a pilgrim and set out on the search for holiness. At the neighbouring town of Manresa he spent some months in a hospice undergoing the most severe self-discipline, fasting and scourging, and engaging in long hours of prayer These excessive austerities injured yet further his already broken health, and for the rest of his life he suffered from periodical attacks of illness. During this period of discipline, however, when, as he says, God wrought with him as a master with a schoolboy, he was not neglectful of the welfare of others and, finding that his severities interfered with his power of helping his neighbours, he gave them up and began to take more care of himself

He next travelled to Jerusalem by way of Rome, but was not allowed to remain in the city, as the Franciscan friars there dreaded the effect on the Turks of his incautious zeal He returned to Barcelona and set himself to make up the deficiencies in his education by a course of study He began to learn Latin, and spent a year and a half studying philosophy at the university of Alcalá, in Spain Here he began to instruct some companions in Christian doctrine, and presented them with copies of his book *Spiritual Exercises*, which was later to become "the spiritual arm of the *Society of Jesus*" On account of this work he was brought up before the Inquisition and imprisoned, but released with the command to spend four years in study before beginning to instruct others

He visited Salamanca, where he was again imprisoned while his doctrines were enquired into, and he was once more prohibited from teaching till he had studied for four years Feeling that his work was hampered in Spain, he made his way to Paris to continue his education (1528) Again he attempted to give religious instruction, but was forbidden by the Inquisition to do so while still a student. In these prohibitions of the Inquisition we may see the wisdom of that body at its best The enforced study which it laid on Loyola transformed him from an impetuous and illiterate youth to a man of ripe judgment and a sound scholar, ready for the great work of founding his society.

At the end of 1529 he met in Paris the men who were its first members. Their names are well known There was Pierre Lefèvre, or Faber, a Frenchman, Francis Xavier, a young professor of philosophy from Navarre, who was afterwards canonised for his work as "apostle to the East," Laynez, who with others represented the Jesuits at the Council of Trent, Bobadille, and two more The seven men determined to consecrate the union of their little company by a vow Accordingly on August 15, 1534, the Feast of the Assumption, they assembled in the crypt of the church of St Mary on the heights of Montmartre Faber, the only priest among them, said Mass, and they took vows of poverty and chastity, and pledged themselves either to journey to the Holy Land or, if that were not practicable after waiting a year in Venice, to go to Rome and offer their services to the Pope

The year of waiting passed without presenting any opportunity of going to Palestine, and it was decided that Loyola and Laynez should go to Rome and place the little band at the disposal of the Pope. As a result of this corporate decision, the Society began to take definite shape A set of rules was drawn up, and the military title of the "Company of Jesus" adopted, being proposed by Loyola because the company had met in the name of Jesus Loyola used the Spanish military term "Compañía" to express his vision of a band of spiritual soldiers living under martial law and discipline

On the journey to Rome, Loyola had one of the visions with which he was frequently favoured. Christ appeared to him with the words, "I shall be propitious to you" The travellers were well received by the Pope, who appointed Faber to teach Holy Scripture and Laynez to lecture in theology at

A.D. —1000 —1050 —1100 —1150 —1200 —1250 —1300 —1350 —1400 —1450 —1500 ◀1540 —1550 —1600 —1650 —1700 —1750 —1800 —1850 —1900 —1950 —2000

the university, while Loyola was left free to carry on his spiritual work, which was so successful that he summoned his other companions to Rome to help him He founded rescue homes for fallen women, orphanages and schools for religious instruction The rest of his time was spent in perfecting the *Spiritual Exercises* and drawing up the *Constitutions* of the Society

The Society was officially recognised by Pope Paul III in 1540, and Loyola was appointed its first general His natural preference for a life of retirement and prayer led him twice to attempt to resign this position, but his desire was opposed by the fathers, who felt that with the rapid increase of the Society he alone could steer it safely through the first critical years of its existence. Accordingly he remained general till 1556, when he died suddenly of fever, and was buried in Rome In 1609 he was beatified, and in 1628 he was canonised

At the death of Loyola, the Society numbered over two thousand members In time the order spread throughout the world, the members mingling freely with mankind, by their personal influence checking the spread of heretical views and bringing back many, particularly among the aristocracy, to their allegiance to the Roman Church. Thus the *Jesuits*, as they were called by their Protestant opponents, were among the chief instruments in bringing about the Counter-Reformation

"The soldier-mind of Ignatius can be seen throughout the constitutions" of the Society In the threefold vow taken by a novice, that of poverty, chastity and obedience, the duty of obedience was the one most emphasised Absolute obedience to his superior was expected throughout the life of every Jesuit. The general during his lifetime was placed by the founder in a position of almost uncontrolled authority, and the ideal state of mind of a Jesuit toward him or anyone deputed by him is thus expressed "In all things *except sin* I ought to do the will of my superior and not my own" It was the great desire of Loyola that there should be absolute uniformity and unanimity in the Society. "Let us all," he said, "think in the same way, let us all speak in the same manner if possible." The result was a body of men completely subject to the will of their general. The Jesuits, unlike the monastic orders, wore no distinctive dress, and had no fixed abode. St Ignatius said that the monks were the infantry of the Church, whose duty was to stand firmly in one place on the battle field, the Jesuits were to be her light horse, capable of going anywhere at a moment's notice, but especially apt and designed for scouting and skirmishing

The original aim of the Society as set forth by its founder in 1540 was—"to offer spiritual consolation for the advancement of souls in life and Christian doctrine, for the propagation of the faith by public preaching and the ministry of the word of God, spiritual exercises and acts of charity, *and especially by the instruction of children and ignorant people*, and by the spiritual consolations of the faithful in Christ." The italicised words cover the two branches of work, *education* and the *mission field*, in which the Jesuits had the greatest success They completely revolutionised education, taught in a fresh and attractive manner, provided free schools, brought out new lesson books, and won the goodwill of their pupils by a mixture of firmness and gentleness For three hundred years the Jesuits were considered the best schoolmasters in Europe "Consult the schools of the Jesuits," wrote Sir Francis Bacon, speaking of education, "for nothing better has been put into practice" Their chief drawback, however,

was an over-emphasis on discipline, thus preventing the free development of character which is the essence of true education.

The work of the Jesuits among the heathen was equally remarkable. In Hindustan and China, North and South America, Brazil and Paraguay, they carried on their civilising work in the face of hardship and death with an unflinching courage and devotion St. Francis Xavier in particular won the hearts of thousands in India, and made converts innumerable

During the seventeenth and eighteenth centuries the Jesuits fell into disfavour, and in 1773 the Society was abolished by Pope Clement XIV. as having outlived its usefulness. Though the Society was dissolved, it was not dead. It maintained its existence in Russia and elsewhere, and in 1814 it was recognised once more by the bull of Pope Pius VII.

CHILDREN'S STORY

By the middle of the sixteenth century Protestantism had spread so widely that certain Catholics bound themselves together in religious orders, pledged to do all in their power to win men back to the Catholic faith The most notable of these religious orders was the *Society of Jesus* founded by Ignatius of Loyola.

Ignatius was born in Spain in 1491 in the riverside castle of Loyola, from which he took his name. His father, a nobleman, already had twelve children when the baby arrived. The little boy did not receive much education, for in those days noblemen's sons despised learning. They thought it unmanly to study books, and cared only for war and adventure As soon as Ignatius had learned to read and write a little he was sent to the Spanish court as a page to Ferdinand and Isabella, the king and queen who enabled Columbus to make his four voyages to America. Here he stayed till he was old enough to be a soldier, and he then joined the Spanish army From his boyhood Ignatius had loved the romances of chivalry and warfare which told of the adventures of the knights of Spain, and he rejoiced to follow in the footsteps of his heroes

As a soldier, Ignatius was extremely brave In 1521 he was with the garrison which was defending a town besieged by the French During the final assault in which the French captured the town, he was struck by a cannon ball which shattered one of his legs and badly wounded the other When the victorious Frenchmen rushed in, they found him lying unable to move and took him prisoner They treated him kindly, however, set his leg, and sent him home in a litter to Loyola There the doctor who saw his leg said that it had been badly set, and that it must be broken and set again. In those days there were no anæsthetics such as chloroform which makes a patient unconscious during an operation, but in spite of the terrible pain caused by the breaking of his leg, Ignatius made no movement except a clenching of his fist

As the young nobleman lay in his bed during the long weary hours of recovery, facing the terrible prospect of being a cripple, two books were brought to him which were to make a complete change in his life. One was a *Life of Christ* and the other a book of stories from the lives of saints.

Then a strange struggle began in his mind As he lay awake at night he would think of the old romances he loved, and of his lady-love, and of the daring deeds which he might yet do for her sake, but presently his thoughts would turn to those stories which he had read of Christ and the saints Which was he to be—the knight of his lady, or the knight of Christ?

One night, in the midst of these confusing ideas, he saw a vision It seemed to him that a new Lady appeared to him, the Virgin Mary herself with the Christ-child in her arms. Immediately a loathing seized him for all the former bad deeds of his life, the gambling, drinking, fighting and pleasure-seeking that had filled his days when he was a courtier or a soldier. He resolved to forsake

all earthly pleasures and to give up his whole life to the service of Christ and His Mother. He would go into a monastery, or on pilgrimage, and make himself a worthy servant of God.

When he had recovered from his illness, Ignatius rode out on his mule, undecided what to do next. He let the mule go where it wished, and it brought him to the gates of a Benedictine abbey

Here he alighted and made up his mind that, like a knight of old, he would watch all night in the abbey church, and the next day he would give himself to God This all-night watch he kept in the dimly-lighted church, kneeling in prayer before the altar of the Blessed Virgin whose knight he had sworn to be In the morning he gave his mule to the monks, and his gay clothing to a passing beggar, laid his sword and dagger on the altar and, clothing himself in a rough, sackcloth garment and with loose hempen shoes on his feet, he wandered forth again. He soon came to a hospice, an inn kept by monks, and here he stayed for a week, eating no food and spending seven hours of each day in prayer, and scourging himself daily with a knotted cord as a penance for his past sins Then he set off on the long and weary pilgrimage to the Holy Land.

As he wandered through Europe, it seemed to him, with his soldier's mind, that the Roman Church was at war against her enemies, and needed knights to fight for her He longed to gather together a band of Christian men pledged to the service of the Church. He soon began to realise, however, that the battle they must fight would be a warfare, not of swords, but of brains He was brought before the Church council, which forbade him to begin his work till he had spent four years in study, for the Church had no use for unlearned teachers. Wishing that he had spent more time at his books as a boy, Loyola obediently set out for the university to train his mind for his great work

For many years he wandered from one university to another, studying in Spain, in London and in Paris. It was in Paris that he met six young men who were to be the first soldiers in his *Society of Jesus*. The seven became firm friends, and Ignatius, by this time a wise and learned man of forty and more, was their leader.

Ignatius and his little group of followers resolved to bind themselves together by a solemn oath Accordingly, on August 15, 1534, they assembled in the crypt of a church on the heights of Montmartre, in Paris There one of them, who was a priest, said Mass, and the band pledged themselves never to marry, to live in poverty as the followers of St. Francis had done, and to serve God by tending the sick, making pilgrimages, or doing any work which the Pope should appoint

A year later Loyola journeyed to Rome to offer to the Pope the services of his company of Christian knights On his way there he had another vision, in which it seemed to him that Christ Himself appeared and blessed his work The Pope received him kindly and accepted the offer of his services and those of his friends, and so the *Society of Jesus* was founded A list of rules of the Society was next drawn up It was decided that the Society should be led by a general, and Ignatius was the first to hold that position, and he remained its general till his death in 1556

A portrait painted by a famous artist gives us a good idea of the appearance of Loyola He was small in stature and, as we have seen, he was lame, but like a true soldier he carried himself so well that his lameness was hardly noticeable. He had a dark olive skin, a high bald head with the broad open brow of a man who thinks deeply, and a thin face which showed the signs of his long prayers and frequent fastings His small, brilliant eyes seemed to penetrate into the hearts of men and to read their thoughts

The Jesuits.—The numbers of the *Society of Jesus* increased so rapidly that by the death of Loyola it counted over two thousand

members They began to penetrate everywhere, and the Protestants gave them the name of *Jesuits*, by which they are commonly known.

Among the Jesuits, as in an army, the first duty was *obedience* A Jesuit must obey without question any order given him by his superior, and once he had received an order he must do all in his power to carry it out, even at the cost of his life. The Jesuits wore no special dress, and built themselves no houses or monasteries, but lived in the world like soldiers in camp, ready at any time to battle with words against the enemies of God and the Church

The great work of the Jesuits was done in the schools They saw that if men and women were to be faithful sons and daughters of the Roman Church, they must be properly taught as boys and girls. Accordingly they paid especial attention to teaching, and called their schools and colleges "fortresses of the faith" In these Jesuit schools short lessons, many holidays, light punishments and many prizes were the rule But when the children were actually learning they were made to work hard. Above all they were taught absolute obedience The Jesuit schools were so famous that even Protestants sent their children to them.

Another great work of the Jesuits was the conversion of the heathen in the newly discovered lands Jesuit missionaries went to India, China, Japan, Africa, the Philippine islands where Magellan had been put to death by the heathen natives, and the great continent of America In these lands they converted hundreds of thousands of men and women from their heathen religions to the worship of the one true God

Ignatius was buried in Rome, and in the year 1628 he was canonised and is now known as St. Ignatius of Loyola

TEACHING HINTS

1. Introduction.—As an introduction to the story of St. Ignatius of Loyola it would be advisable to explain simply a few facts concerning the Counter-Reformation Explain that *counter* means *against*, and show how the Reformation within the Church was in opposition to the religious movement which drove men outside it (Compare counteract, counter-balance, counter-march, etc.)

2. Memory work.—The memory work and exercises for this lesson will naturally depend to a large extent on what the teacher selects for the introduction to the lesson, so none is given here. The practice, however, of arranging for definite memory work to be learned and, if possible, written in notebooks, is so valuable that it should be regularly followed As the children gain facility in writing compositions they should be given a few written exercises as well as oral ones The writing of short answers to questions is excellent training, and nothing more clearly shows the teacher how far the lesson has been understood by the children

3. St. Francis Xavier.—Francisco de Xavier (1506-1552), Jesuit missionary and saint, is often called the "Apostle of the Indies" He was the son of Juan de Jasso and Maria de Azpilcueta y Xavier and was born at his mother's castle of Xavier, at the foot of the Pyrenees, and following a Spanish custom of the time, he took his mother's name In 1542 Xavier reached Goa and at once began walking through the streets ringing a small bell, and telling all to come and send their children and servants to be instructed in the principal church At Travancore he is said to have founded forty-five Christian settlements, he visited Ceylon, Malacca, the Moluccas and other parts of the Malay archipelago In 1549 he went to Japan, where he remained for two years, and afterwards returned to Goa At the end of 1552 Xavier reached China, but he was attacked by fever and shortly afterwards died. His body was later transferred to Goa, where it lies in a magnificent shrine. Xavier is regarded as the greatest of Christian missionaries since the first century A.D

XVI. THE GREAT ARMADA



From the picture by Sir Seymour Lucas, R A] [*Photo Rischgitz*

DRAKE ON BOARD THE "REVENGE"

THERE is a Class Picture (No 57 in the portfolio) based on the well-known illustration of Queen Elizabeth Hawking—see page 145.

INTRODUCTION

Edward VI. (1547-1553).—On the death of Henry VIII. his only son Edward came to the throne He was a frail child but worked hard at his studies. Edward was nine years old when he became king, and as he died at the age of sixteen he had little to do with the government of the country During his brief reign, however, the Protestant movement made much progress Edward was strongly in favour of the reformers, and he would sit in his garden, where he had a pulpit erected, and listen to the preachings of Hugh Latimer, bishop of Worcester, for hours together

Many "men of the new learning" thought that sufficient changes had been made when the king in place of the Pope became head of the Church in England The common people, too, who had been willing enough to have the Pope set aside, began to feel that they had little cause for joy The monastery lands had passed to harder masters, the dues and services which they had hoped never to have to pay again were levied once more When they looked at the ruined shrines they felt that much which belonged to their religious lives had been taken away.

Against these was a set of earnest men who believed that so much of the old religious teaching was wrong that they wished to uproot everything connected with it. In addition, there were those who had become rich from the Church spoils and were anxious to become richer

Henry had directed by will that England should be governed by a council of sixteen members, until Edward came of age The council appointed the young king's uncle, Edward Seymour, their leader, with the title of Protector He was made duke of Somerset, and he practically ruled the country as a king. By order of the government there was much smashing of images in churches and of painted glass bright with the figures of saints and of angels Henry's *Treason Act*, the *Six Articles Act* and others were repealed, and many more changes were made. Up to this time the services and prayers of the Church had been given in the Latin tongue, but Cranmer translated these prayers, and prepared an English Book of Common Prayer which parliament ordered to be adopted, 1549. This was accompanied by an *Act of Uniformity* which compelled the clergy to use the new prayer book

We can understand something of the different opinions held in England with regard to the Reformation, when we remember that Cranmer, the archbishop of Canterbury, and Ridley, the bishop of Rochester, were in favour of the changes; but that, on the other hand, Gardiner, the bishop of Winchester, and Bonner, the bishop of London, were put into prison because they opposed the changes.

When Somerset fell into disfavour the earl of Warwick, who later assumed the title of the duke of Northumberland, became head of the government. Northumberland himself appeared to care little about religious matters, but for selfish reasons he pushed forward the Reformation very rapidly. All Catholics were expelled from the council; Catholic bishops—Gardiner, Bonner and others—were deprived of their sees; a second Act of Uniformity was passed and a second Book of Common Prayer was issued, altars and organs were taken down, old service books destroyed, and the destruction of images went on apace

In 1552 the health of the king was seen to be failing, for he was smitten with consumption. By a statute of 1544 Mary had been named to succeed Edward, and Northumberland was alarmed for his own safety. Mary was an ardent Catholic and Northumberland had done his best to help the Protestant movement. He persuaded Edward to leave the crown by will to Lady Jane Grey, the grand-daughter of Mary, the younger sister of Henry VIII. To make his own position secure, his son, Lord Guildford Dudley, married Lady Jane. On the death of Edward, Lady Jane was proclaimed queen in London She was an intelligent girl of sixteen and a fervent Protestant In London there were many Protestants, but so greatly was Northumberland hated that when Lady Jane passed through the streets no one raised a shout of welcome—there was a dead silence. Most people in England wanted Mary for queen In a few days she was at the head of thirty thousand men. Northumberland gathered what troops he could to oppose her, but his own soldiers threw their caps in the air and shouted "Long live Queen Mary." Mary was proclaimed queen in London. The unfortunate Lady Jane, who had been queen in name for nine days, passed from a throne to a prison.

Mary Tudor (1553-1558).—The people generally rejoiced at the coronation of Mary for they much preferred a daughter of "bluff King Hal" for their queen rather than a girl who was in the power of the duke of Northumberland Mary was now thirty-seven years of age She was fervently attached to the old religion, and her fondest desire was to re-establish it in England She longed to see restored to the Church the lands that had been confiscated at the dissolution of the monasteries, and she was anxious to marry Prince Philip of Spain, the son of Charles V.

Mary was inclined to be merciful to those who had combined against her, and only Northumberland and two others were executed. The bishops who had been deprived of their sees under the Protestant rule of Edward were reinstated, and the reforming bishops were in their turn committed to the Tower The ecclesiastical laws of Edward VI. were repealed, and those of Henry VIII re-enacted, the Catholic missal again took the place of the Protestant prayer book

Archbishop Cranmer boldly published a letter expressing his grief that the Mass had been restored in Canterbury cathedral, and he denounced its teaching He was sent to the Tower, whither Ridley, who had succeeded Bonner as bishop of London, and Latimer, bishop of Worcester, soon followed him



PHILIP II OF SPAIN

Engraved portrait by Francis Hogenberg, 1555

The queen's chief adviser was Gardiner, once more bishop of Winchester, whom she delivered from the Tower where he had been confined during the late reign. He was made lord chancellor and he directed Mary's policy when in 1553 she called a parliament to give effect to her wishes. It soon appeared, however, that parliament was not willing to have the Pope as Head of the English Church, or to restore the confiscated Church lands Parliament was delighted to re-establish the worship and services which had prevailed in Henry's reign, but it presented a petition against the Spanish marriage, for the English were alarmed at the prospect of a foreigner having power in England Mary dissolved parliament rather than take its advice.

The immediate result of Mary's action was an insurrection which had for its aim the placing of Elizabeth on the throne. Lady Jane's father, the duke of Suffolk, led the rebellion in the Midlands and Sir Thomas Wyatt raised Kent. Suffolk's party failed, but Wyatt, with a large following, advanced against London

The queen had no troops to meet him, and it was doubtful whether the citizens would support her or Wyatt Mary showed remarkable courage. She refused to leave London, and ordered the lord mayor to summon a meeting of the citizens at the Guildhall. Here, in her deep manly voice, she appealed to the people She declared that she would never marry without the consent of parliament, and she urged, "Stand fast against these rebels, your enemies and mine. Fear them not, for

I assure you I fear them nothing at all"

Next morning twenty thousand men had enrolled themselves to guard the city. The greater part of Wyatt's men were cut off in an engagement at Hyde Park Corner. With three hundred followers he reached Ludgate—but the gate was closed against him. The daring leader was seized and sent to the Tower

Mary now was no longer merciful Not only were Suffolk and Wyatt executed, but the innocent Lady Jane and her young husband, Guildford Dudley, were also sent to the block.

The unsuccessful rising against Mary's marriage had the effect of inducing parliament to give its approval, and in July, 1554, Philip landed in England and the marriage took place in Winchester cathedral Philip received the title of king, and the names of Philip and Mary appeared together in all official documents, and their heads on the coins.

A new parliament gave its consent for the re-enactment of the statutes for the burning of heretics, and agreed to a reunion with the see of Rome On St. Andrew's day, November 30, 1554, Cardinal Pole gave his solemn absolution to the nation The queen and king, with all the members of both Houses of Parliament, knelt humbly before him, confessed the sin of breaking away from the Roman See and received absolution. This was to Mary a moment of unbounded happiness She had for long grieved over the separation of England from Rome, and she believed from the bottom of her heart that the only path to happiness in this world and the next, both for herself and the nation, was to root out heresy

The Catholic reaction had now firmly set in To one thing only did parliament decline to give its consent It would not restore the abbey lands. Mary, herself, however, at her own expense, restored several of the monasteries. Now onwards, for nearly four years, the terrible law for the burning of heretics was put into force High and low, rich and poor alike suffered for their faith. In the first year four bishops—Hooper, Ferrar, Latimer and Ridley—died at the stake

Cranmer was deprived and Cardinal Pole became the new archbishop of Canterbury For two more years the heresy laws were enforced The number of those who suffered has been reckoned at two hundred and seventy-seven Most of these were burnt in the eastern and south-eastern parts of England, for here the Protestants were thickest At Oxford, Worcester, Stratford in Essex, and other places memorials to the martyrs still stand In 1556 Cranmer himself suffered death at the stake Everywhere the people looked upon these executions with horror and disgust. The resolute behaviour of the martyrs won their general sympathy The main result of the persecution was to turn the hearts of Mary's people from herself, her Church and her creed Their loyalty turned to bitter hatred

It is a pitiful tragedy that a brave and steadfast woman like Mary, and one who was naturally generous and loved justice, should, out of her terrible conception of religious duty, have brought upon herself the name of the most merciless persecutor in English history. And she died with the bitter knowledge that all she had done was in vain

To add to the sorrow of her last years England as an ally of Spain was dragged into war with France The result was that in the first weeks of January, 1558, a French army captured Calais, which England had held for two hundred years This was a terrible shock to Englishmen It was no real misfortune, for the cost in men and riches to hold a fortified town in a foreign land was great; but the disgrace was deeply felt by the people and the queen. Added to this, Mary's husband had deserted her and she was suffering from an incurable disease On November 17, sad and lonely, the poor queen died, knowing that all her zeal for the Catholic faith had resulted in failure, knowing that her husband whom

she loved had deserted her, and that her subjects hated her Cardinal Pole died the next day.

Queen Elizabeth (1558-1603).—Elizabeth, Henry's younger daughter, was the child of his second wife, Anne Boleyn, and she inherited the qualities of both her parents She had her father's good looks, physical strength, quick wit, love of scholarship and indomitable will These masculine qualities were set off by the love of finery, the passion for display, and the thirst for admiration which came to her from her mother She bewildered all who met her by the apparent inconsistencies of her conduct, but in reality her aims were simple, namely, "to preserve her throne, to keep England out of war, to restore civil and religious order" These aims she on the whole achieved, keeping her country in peace and prosperity for nearly half a century, while the rest of Europe was torn with strife



QUEEN ELIZABETH, A D 1558
Illuminated initial of Statutes of Order of St Michael and St George (Public Record Office)

On her accession, her position was one of grave difficulty and danger A religious civil war seemed imminent, England was at war with France, her exchequer was low, and her army and navy deplorably weak, Elizabeth herself was regarded by her Catholic subjects as illegitimate and therefore not the lawful monarch, while at any moment hostilities might break out between England and Spain in which the island kingdom would be engulfed

Elizabeth proved herself equal to the emergency She knew that a few years of peace would see the settlement of many of her difficulties Accordingly she set herself to gain time by conciliation and compromise She gave the Pope to understand that she might in time return to the Catholic Church, bringing England with her, and thus she prevented Catholic attacks upon her She kept the courts of Europe in suspense by coquetting with proposals of marriage with one prince after another. She made peace with France (1559), gradually freed herself from dependence on Spain, and steadily strengthened her army and navy

Elizabeth carried out her principle of compromise and conciliation in her religious settlement with marked success She herself probably had no strong personal opinions on the matter, she had been a Protestant under Edward VI and a Catholic under Mary Her aim in religion, as in all else, was unity for her subjects and supremacy for herself, hence she fell back on the system of Henry VIII. "I shall do," she declared, "as my father did" With this aim she repudiated once again by an *Act of Supremacy* (1559) the authority of the Pope, but she refrained from taking the title of "Head" of the Church, so offensive to Catholics, and contented herself with the position of "Supreme Governor of the realm" In 1559 an *Act of Uniformity* required all English subjects to attend their parish churches

regularly But so long as this Act was obeyed, no inquiry was made into the actual beliefs held by any ordinary citizen. This wise and moderate settlement did much to establish confidence between the English and their ruler

Having thus secured peace at home, the queen was able to turn her attention to Spain. From the beginning of her reign she had realised that conflict with that country must arise sooner or later. But by her wonderful diplomacy she had succeeded in averting it until a prosperous and united England stood ready to meet the danger This delay she had achieved by an alliance with France (secured in 1572), which made Spain afraid to attack England with such a powerful ally behind her, and also by secretly supporting the Netherlands, when the Protestants were revolting against their Catholic master, and so keeping his attention occupied

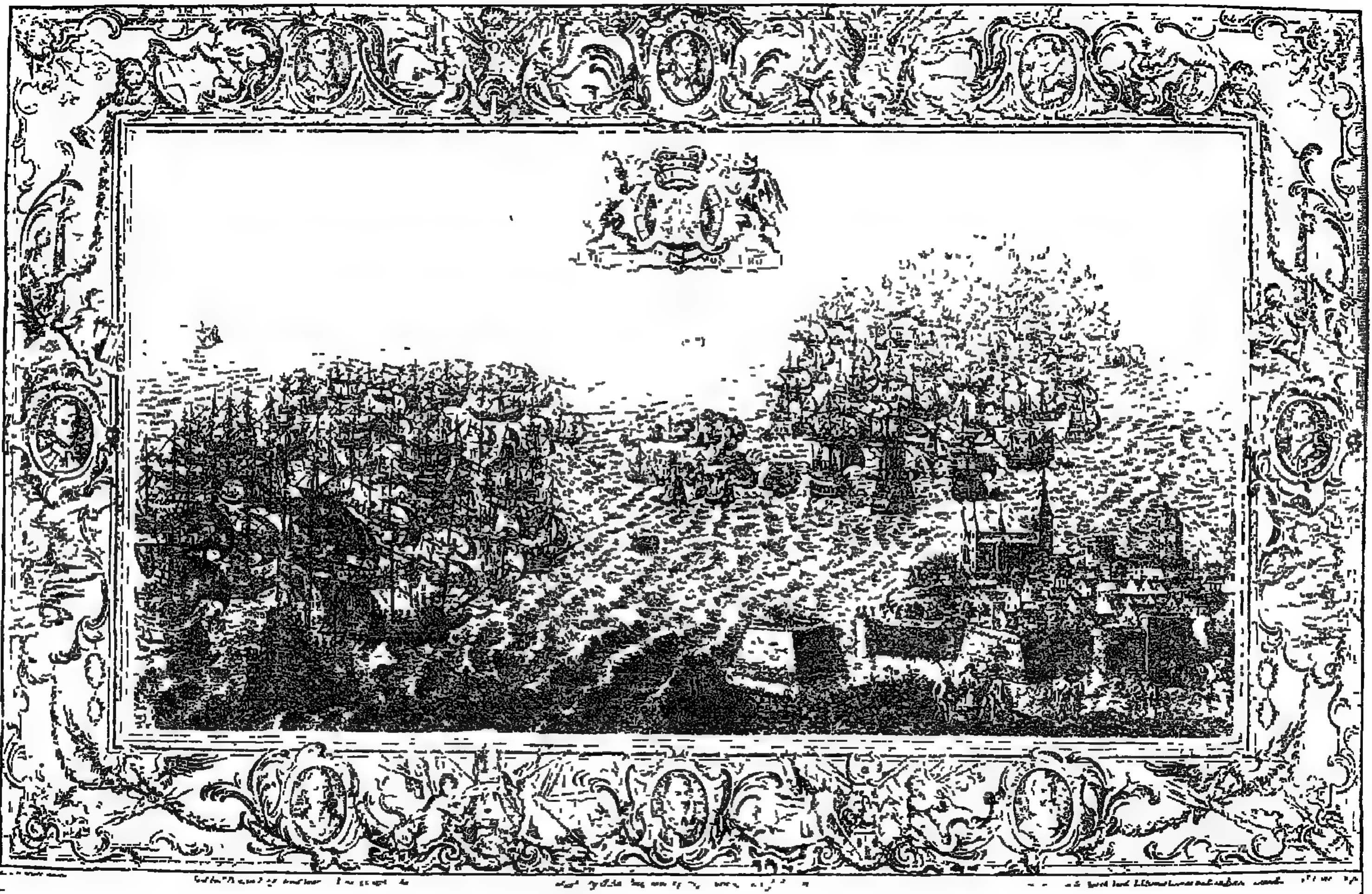
In 1585 a religious civil war broke out in France and her alliance was no longer of use to England But Elizabeth by that time felt strong enough to stand alone without the aid of France. She decided to throw down the challenge to Philip Accordingly, she made three definite moves toward provoking hostilities She *openly* sent help to the Netherlands, thus enabling them to succeed in their revolt. She encouraged her seamen equally openly to plunder Spanish ships and towns. Finally, she executed Mary Queen of Scots, who was regarded by Catholics as the lawful queen of England

Mary Queen of Scots (1542-1587) was a descendant of Henry VII 's daughter Margaret, who had married a Scottish king, James IV. Mary was the grandchild of this union, and on the death of her father, James V., she became queen of Scotland. In 1558 she married the dauphin of France, afterwards Francis II., and so became queen of France as well. Soon after his death (1560) she returned to Scotland to rule. Mary was a Catholic and those who regarded Elizabeth as illegitimate considered Mary the lawful queen of England

Scotland had for the most part adopted the Protestant religion in an extreme form, as preached by John Knox, a disciple of Calvin. Mary outraged the Scottish Protestants by marrying Lord Darnley, a young Catholic nobleman of dissolute character. The marriage proved to be an unhappy one and less than two years after its celebration Darnley was murdered. Strong suspicion of Mary's share in the murder caused a revolt among the Scottish nobles which drove her from the throne. She escaped to England, where for eighteen years she lived in captivity Her presence in the country, and the numerous plots which it encouraged, were a constant menace to Elizabeth. In 1586 a new and most dangerous conspiracy was discovered, Mary was brought to trial, found guilty and beheaded, although Elizabeth signed her death-warrant with great reluctance (1587) Mary bequeathed to Philip of Spain her title to the English crown

The Armada.—Philip hesitated no longer He realised that the triumph of the Catholic cause in Europe and the safety of the Spanish possessions in the New World depended on his conquest of England. With this aim, therefore, he began to gather a mighty fleet, the "Invincible Armada." The preparations were interrupted in 1587 by a raid on the harbour of Cadiz, the headquarters of the Spanish fleet, by Sir Francis Drake, which did so much damage that the start of the Armada was delayed for a year. In the spring of 1588, however, it was ready to sail, and one hundred and thirty-two great ships left the Peninsula on their way to England. A gale delayed them, and it was not till July that "the sails of the

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FLIGHT OF THE ARMADA TO CALAIS

From Pine's engraving of the Tapestry Hangings of the House of Lords

Armada were seen from The Lizard, and the English beacons flared out their alarm along the coast."

Meanwhile, England had been preparing for the reception of the Spaniards An army was gathered at Tilbury, all available forces from the Midlands were mustered in London, and the south and east coasts were strongly guarded Even the Catholic lords found their patriotism stronger than their religious zeal, and brought their men to join the army at Tilbury At sea, too, the English were ready, though their force of eighty small ships, of which only thirty-four were fighting ships, and the rest merchant-men, most of them hardly bigger than our modern yachts, seemed no match for the great Spanish galleons, the smallest of which exceeded in size the largest English vessel What the English lacked in fighting power, however, they made up in spirit. They were fortunate in their commanders, men of experience and courage, of whom the most noteworthy was the vice-admiral Sir Francis Drake His quiet confidence is shown in the often quoted story of his remark when the news of the Armada's coming was brought to him during a game of bowls " There is time to finish the game first, and beat the Spaniards afterwards," said Drake coolly. Such was the spirit in which the English went into the battle

Meanwhile, the most "fortunate and invincible Armada" sailed on, and on July 20 appeared off Plymouth The plan was for it to sail up the Channel as far as Dunkirk, and there to anchor and to allow a huge Spanish army, which was waiting near Antwerp, to cross the sea and invade England But this design could not be carried out The small, swift English ships slipped between the Spaniards and the shore and followed them up the Channel, doing as much damage as possible, but avoiding coming to close quarters This running fight lasted for seven days, during which it was seen that the slow-moving Spanish galleons, overcrowded by seasick soldiers unused to fighting at sea, were no match for the English vessels, manned by experienced sailors who could fire three shots to the Spaniards' one, and could sail their light clippers in and out as they pleased among the unwieldy ships of the enemy

At last the Armada anchored off Calais During the night the English admiral sent eight fire ships down upon it, and these threw the whole fleet into disorder In the morning the English fell on the scattered vessels, and by the next day the whole Armada was fleeing northward, hoping to reach safety by sailing round the north coast of Scotland, the only available route Fierce storms drove the ships to destruction, and of the one hundred and thirty-two vessels that left Spain only fifty-three returned.

The defeat of the Armada freed Europe for ever from the menace of Spanish power

CHILDREN'S STORY

Queen Elizabeth, the last of the Tudor sovereigns, was the daughter of Henry VIII. and Anne Boleyn At her accession she was in her twenty-fifth year Like her mother she had much personal beauty Her figure was tall and commanding, her face long but queenly and intelligent, her eyes quick and bright She was a bold horse-woman, a good shot, a graceful dancer, a skilled musician, and an accomplished scholar. From her father she inherited her frank and hearty address, her love of popularity, her dauntless courage and her amazing self-confidence She had the Tudor temper. In a harsh, manlike voice she would soundly rate great nobles as if they were schoolboys, at times she would use the coarsest language to her ministers Like her mother she delighted in splendour and pleasure Her delight was to move about the country from castle to castle accompanied by a gorgeous procession of courtiers. She was extremely vain She hoarded jewels, and her dresses were innumerable. She delighted in flattery, and a courtier who could pay her a compliment was sure to win her favour



QUEEN ELIZABETH

From a picture given by her to Sir Henry Sidney, and now at Penshurst.

But, behind all this outward show, her nature, like her father's, was hard as steel Although she appeared to rejoice in luxury, yet she lived frugally and worked hard. Like her grandfather, Henry VII., she knew the value of money and wasted nothing in reckless extravagance as her father had done. In the council chamber she forgot her coquetry and love of flattery, she spoke in plain, downright speech and expected the same of her advisers She gathered about her a noble group of ministers, to whom she listened carefully, but she was never carried away by the advice of any one; her policy as a whole was her own. It was a policy of good sense. Her aims were set clearly before her, to preserve her throne, to keep England out of war, to restore good order in the land.

Elizabeth's great task.—At her accession Elizabeth was confronted by a tremendous task. England had been dragged by Spain into a useless and ruinous war with France. Her fighting strength had sunk so low that France was mistress of the Channel. In the north Scotland was a standing danger, for Queen Mary Stuart had married Francis, the dauphin of France, eldest son and heir of King Henry II., and those people in England who thought that Elizabeth had no proper right to the throne looked on Mary Stuart as the one who should take her place.

The country was heavily in debt, trade and industry were not in a flourishing condition, the poorer classes were suffering and discontented, there was bitter enmity between the Catholics and Protestants. Such was the condition of England when Elizabeth came to the throne England's one hope lay in the character of her queen Elizabeth was resolved to govern so that England might be great and flourishing. Above all she was an ardent patriot, she loved her people, and they in turn felt a chivalrous devotion to "Good Queen Bess." Addressing her first parliament she said, "Nothing, no worldly thing under the sun, is so dear to me as the love and good-will of my subjects" And the love and good-will which were so dear to her she fully won She had the splendid courage that looks danger in the face without flinching.

This remarkable queen ruled England for forty-five years, and ruled it so well that her people loved her and called her "Good Queen Bess," and "Gloriana"—The Glorious Queen We still speak of her reign as the "Elizabethan Age," or "the spacious days of Great Elizabeth"

Elizabeth's first great task was to settle the religious troubles of the land In order to understand what she did, we must remember that in those times neither Protestants nor Catholics understood what is meant by being *tolerant*, that is allowing other people to have their own religious opinions The Protestants, when led by a Protestant ruler, persecuted the Catholics, and the Catholics, when their turn came, persecuted the Protestants. If we remember this we shall the better understand the great work of Elizabeth, who managed to win the love and respect of both moderate Protestants and moderate Catholics.

She knew that though many of the people of England were Protestants, nearly half of them were still Catholics, so she tried to please both parties She made some laws which pleased the less extreme Protestants, and others which satisfied the less extreme Catholics Most important of all, she called herself "Supreme Governor" of the Realm, and did not take the title of "Head" of the Church, the assumption of which by Henry VIII. had been a great cause of offence to Catholics. Of course, many people were not content; some zealous Protestants thought that Elizabeth had not done enough for the Reformation, while some zealous Catholics thought that she had done too much. But her "Middle Way," as it is sometimes called, was very successful, and year by year more people accepted the Church of England Thus Elizabeth won the people to her side, and so was able to turn her attention to the danger from Spain

English seamen constantly attacked Spanish ships as they were voyaging homewards to Spain laden with gold and silver, and English seamen, too, constantly raided Spanish settlements in the new lands of America England knew full well that some day the Spaniards would declare war on England, in order to put a stop to this raiding and piracy. At the beginning of her reign, no one knew whether Elizabeth was a Protestant or not, and Philip of Spain, who was a Catholic, was very friendly to her, and even offered to marry her, as he had before married her half-sister Mary But Elizabeth refused him, as she later refused many other kings, princes and nobles who asked her to marry them. When it became clear that Elizabeth was a Protestant, the Pope and the Catholic princes who were anxious to make England a Catholic country once more told Philip that, as he was the most powerful king in Europe, he must conquer England, and force the people to accept the Catholic faith.



Queen Elizabeth Hawking
(Class Picture No 57 in the portfolio)

This Spanish invasion was the terrible danger which for thirty years hung over England At any moment Philip might land with a huge army, and conquer the country for Spain. But Elizabeth was very clever, and for many years she was able to prevent war between England and Spain, and throughout those years she was strengthening her army and navy and teaching Englishmen to unite together in defence of their queen and country At last she felt that England was strong enough to fight the Spaniards, and she decided to force Philip to make war

She sent money openly to the Protestants who were fighting against Spain in the Netherlands She openly encouraged the English sea-captains to rob Spanish ships and Spanish towns in the New World Finally, she signed a paper ordering the execution of Mary Queen of Scots

When the news of this last action came to Philip he felt that the time had come to conquer England For Mary,

the beautiful Catholic queen of Scotland, had had an English grandmother, and the Catholics said that Mary, and not Elizabeth, was the true queen of England. Mary had been forced to flee from the Protestants of Scotland into England, where she had been kept a prisoner for eighteen years. So long as Mary was a prisoner in England the Catholics were constantly plotting to kill Elizabeth and place Mary on the throne. In the end these plots grew so dangerous that the parliament decided that Mary must be beheaded, and Elizabeth, much against her will, signed the death-warrant. On February 8, 1586, the beautiful and unhappy queen of Scots met her death by the heads-man's axe. The people of England re-joiced at the news. Great bonfires were lighted, the churches rang out their peals of bells, and the people feasted, for they felt that at last their own loved Queen Elizabeth was safe from further plots.



Sir Francis Drake
Old Dutch Engraving

The Armada.—As soon as Philip of Spain knew of the execution of Queen Mary, he prepared to invade England to punish Elizabeth and her people. Philip got ready a great fleet, or *Armada* as he called it, and ordered the Duke of Parma, his general in the Netherlands, to be ready to bring an army across the Straits of Dover. But England was now better prepared than she had ever been before. For the last thirty years she had been building and fitting out ships, and the English sailors, under men like Hawkins, Drake, Howard and Frobisher, were bold and skilful.

King Philip thought that the English Catholics would join him and fight against Elizabeth, but every one remained true, and fought bravely for his native land. The queen placed Charles, Lord Howard of Effingham, in command of the English ships, which altogether numbered two hundred. Philip gathered his army in Cadiz harbour, but Francis Drake suddenly attacked Cadiz and sent fire ships into the harbour. About eighty Spanish ships were burnt, and the start of the Armada had to be put off for another year. Drake called this "singeing the king of Spain's beard."

About the end of May, 1588, the Spanish fleet set sail, it was made up of about one hundred and thirty great ships with thirty thousand men, and was ordered to sail to Calais to pick up the Duke of Parma with an army of seventeen thousand men On July 19 the Armada was sighted off The Lizard, and the beacon fires blazed from south to north of England to tell the people that the enemy was near England had only thirty-four ships in the royal navy, but merchants of all kinds hastily fitted up their smaller vessels with guns and men, so that the total number was about two hundred, and although the ships were small, they were very quick and were manned by splendid seamen The queen went to visit the fleet at Tilbury on the Thames, and in her speech to the men she said "I know I have but the body of a weak and feeble woman, but I have the heart of a king and of a king of England too."

The English ships sailed out of Plymouth harbour and followed the Armada up the Channel, doing all the harm they could. The running fight up the Channel lasted a week, and at length the Armada, considerably damaged, but yet much stronger than the English, anchored off Calais. The Spaniards were full of hope, for with the help of Parma's soldiers they expected to conquer England But in the night the English sent fire ships among them, and fearful that their fleet would be destroyed as the ships in Cadiz had been, the Spaniards were seized with panic, and made wild attempts to get out of the way of the fire ships, none of their ships was burnt, but one was wrecked The rest sailed out to sea towards the north-east, with the English close behind them The English fleet attacked them off Gravelines on the coast of Flanders, and destroyed many of their ships, but a gale blew up and forced the English to cease fighting, and when the storm passed, the Spaniards were in full flight towards the north The English chased them for several days as far north as the Firth of Forth, and then returned to port

The troubles of the enemy were not over; a violent storm burst on them, and wrecked many of their vessels, the coasts of Norway, Scotland and Ireland were strewn with wrecks. Out of all that great Armada not more than one-half returned to Spain. Nothing is known of what happened to one-quarter of the fleet It is very likely that they were wrecked on the rocky coasts of Ireland and Scotland, and not a soul was saved to tell of their end Not one English ship was lost, and not a hundred Englishmen were killed. The people of England said· "God blew with his winds and the enemy were scattered." It was a splendid victory for England, and never again was the power of Spain a danger to this country.

The "Good Queen Bess" died at the age of seventy years, after a wonderful reign of forty-five years, during which long period England made marvellous progress—in trade, in shipbuilding, in voyages, in buildings, in dress, in education, and indeed in every way by which a great nation can well improve.

TEACHING HINTS

1. Galleon.—The name formerly given to large ships of war used by the Spaniards They were shorter and higher than galleys, having castles at each end of the vessel, and four decks armed with batteries. There were only four galleys in the Armada; they were impelled partly with sails, and partly by oars rowed by galley-slaves

2. Beacon.—Signal or beacon fires were lighted on the highest points of land throughout the country to warn the people of the coming of the Armada. Compare the means adopted at the present day for conveying news—telegraph, telephone, wireless telegraphy, aeroplanes and hydroplanes.

3. The "Triumph."—This was the "Dreadnought" of the English fleet It was the size of a small coasting vessel of the present day.

4. Plymouth.—This was a noted port in Tudor times, and is still an important naval station. A fine statue of Sir Francis Drake has been erected on Plymouth Hoe.

5. Prayer Book.—The First Prayer Book of Edward VI. (1549) was the completion of the work begun in the reign of Henry VIII. In the Second Prayer Book (1552) the alterations were chiefly the work of Archbishop Cranmer.

6. Lord Darnley.—The second husband of Mary Queen of Scots Their child became James I. of England, and united the crowns of England and Scotland While recovering from an illness in a house called the "Kirk of Field," near Edinburgh, Darnley was blown up with gunpowder The earl of Bothwell was supposed to have been the contriver of his murder, and as the queen married this earl very shortly after the death of Darnley, the nobles forced her to give up the throne in favour of her little son She was imprisoned in Lochleven Castle, but managed to escape and gather an army, which was defeated at Langside, near Glasgow, by the Scots troops under the leadership of Murray, who was then governing the state in place of the little king Mary fled on horseback into England, and was kept a prisoner for nearly twenty years She was beheaded in the porch of Fotheringay Castle

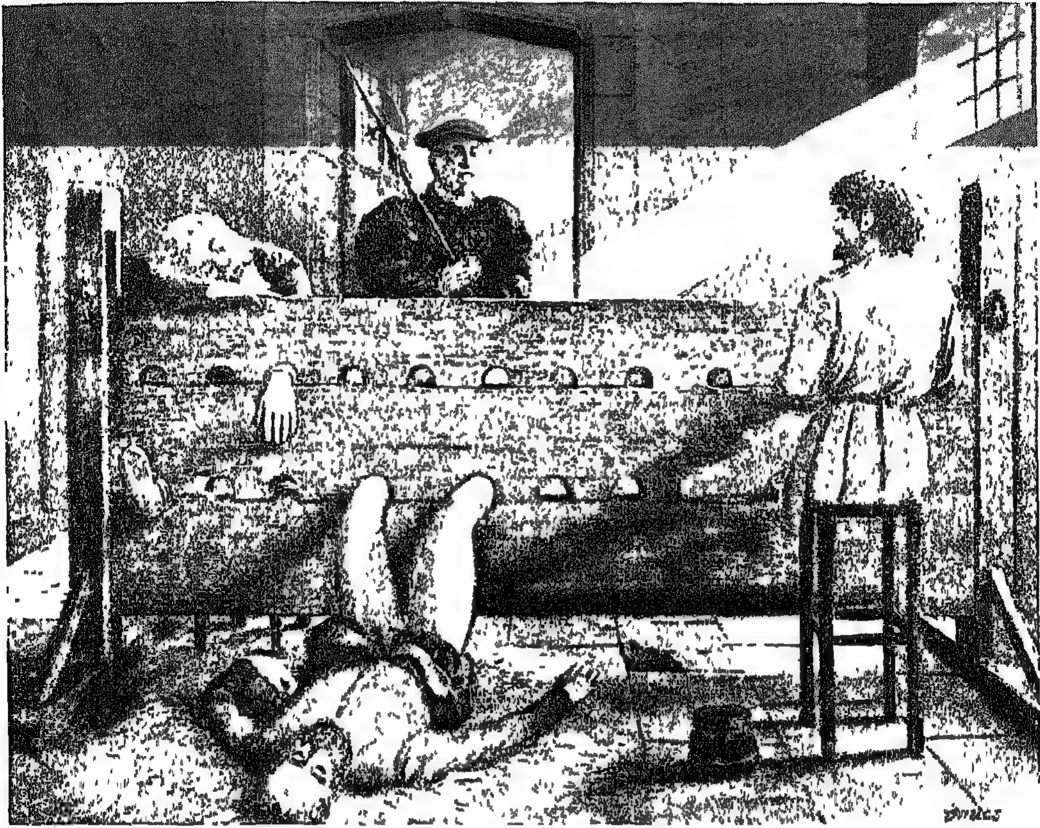
7. Hugh Latimer (1490-1555).—A famous preacher He became bishop of Worcester in Henry's reign but, as he would not agree to the *Six Articles*, he was imprisoned Crowds of people flocked to hear him preach, and he was a great favourite of the young king, Edward VI On the accession of Mary, Latimer, now nearly seventy years of age, was burned at Oxford in company with his friend bishop Ridley. He cheered his friend at the last sad moments by reminding him that, through their deaths, the Protestants would ever remember them and uphold their faith. Latimer's famous words were, "Be of good cheer, Master Ridley, we shall this day light a candle by God's grace in England as I trust shall never be put out"

8. Memory work.—(*a*) Queen Elizabeth, the last of the Tudor sovereigns, was the daughter of Henry VIII and Anne Boleyn. (*b*) Her chief aims were to keep England out of war and to restore good order in the land (*c*) She said to her first parliament, "Nothing, no worldly thing under the sun, is so dear to me as the love and good-will of my subjects" (*d*) The Catholics thought that Mary Queen of Scots should be queen of England, she thus became the centre of many plots against Elizabeth, so that in the end she had to be executed (*e*) Philip of Spain sent the *Armada* to conquer England, but it was completely defeated, 1588 (*f*) Queen Elizabeth ruled England for forty-five years, and ruled it so well that her people loved her and called her "Good Queen Bess"

9. Exercises.—(*a*) How old was Elizabeth when she came to the throne? (*b*) Who was her father? (*c*) Who was her mother? (*d*) What were the names of her brother and sister? (*e*) In what ways was Elizabeth like her father? (*f*) Why did people call Elizabeth "Good Queen Bess"? (*g*) Why did she not take the title of "Supreme Head of the Church"? (*h*) Why did Spain go to war with England? (*i*) Who was Mary Stuart? (*j*) Why was she executed? (*k*) In what year did the Armada come to England? (*l*) Where did it come from? (*m*) How did Drake delay the sailing of the Armada? (*n*) How was the news of its arrival made known in England? (*o*) Where were the English ships stationed? (*p*) How long did the fight in the Channel last? (*q*) Where did the Armada go next? (*r*) Why did the Armada flee to the north? (*s*) What happened to many of the ships? (*t*) For how many years did Elizabeth reign over England? (*u*) She died in the year 1603. In what century was that?

XVII. LIFE IN TUDOR ENGLAND

PICTURE REFERENCE



IN PRISON IN TUDOR TIMES

(Class Picture No 56 in the portfolio)

THE following extracts from contemporary writers of Tudor and early Stuart times are interesting and informative reading. They will be helpful to the teacher when talking about the social life of the people of Tudor England

In addition to the Class Picture of Queen Elizabeth Hawking (No 57 in the portfolio) there are four additional Class Pictures

- No 56 In Prison
- No. 58 A Play in an Inn Yard
- No. 59 Busy Cooks.
- No. 60 May-Day Revels

Reproductions of these pictures are given on pages 149, 150, 151 and 155 They are all described in the Reference Book.

England's resources.—The air of England is temperate, but thick, cloudy and misty. England yields apricots plentifully, musk melons in good quantity, and figs in some places, all which ripen well, and England hath such abundance of apples, pears, cherries and plums, such variety of them and so good in all respects, as no country yields more or better; for which the Italians would gladly exchange their citrons and oranges



A PLAY IN AN INN YARD

(Class Picture No 58 in the portfolio)

The English are so naturally inclined to pleasure, as there is no country wherein the gentlemen and lords have so many and large parks only reserved for their pleasure of hunting, or where all sorts of men allot so much ground about their houses for pleasure of gardens and orchards. England hath inexhaustible veins of lead and iron and also of tin, and yields great quantity of brass and alum and iron, and abounds with quantities of freestone and fountains of most pure salt. England abounds with sea coals upon the sea coast and with pit coals within land But the woods at this day are rather frequent and pleasant than vast, being exhausted for fire and for iron mills, so as the quantity of wood and charcoal for fire is much diminished, and in some places, as in the Fens, they burn turf. Yet in the meantime England exports great quantity of sea coal to foreign parts

In like sort England hath infinite quantity as of metals so of wool and of woollen clothes to be exported England abounds with corn which they may transport when a quarter is sold for 20s or under, and by God's mercy England scarce once in ten years needs supply of foreign corn Yet I must confess that daily this plenty of corn decreases, by reason that private men, finding greater commodity in feeding of sheep and cattle than in the plough requiring the hands of many servants, can by no law



BUSY COOKS

(Class Picture No 59 in the portfolio)

be restrained from turning cornfields into enclosed pastures. England abounds with all kinds of fowl, as well of the sea as of the land, and hath more tame swans swimming in the rivers than I did see in any other part.

It hath multitudes of hurtful birds as crows, ravens, and kites, and they labour not to destroy the crows consuming great quantities of corn because they feed on worms and other things hurting the corn, and in the great cities it is forbidden to kill kites and ravens, because they devour the filth of the streets England hath very great plenty of sea and river fish, especially above all other parts abundance of oysters, mackerel, and herrings, and the English are very industrious in fishing, though nothing comparable to the Flemings therein.

The yeomen.—This sort of people confess themselves to be no gentlemen, but give the honour to all which be gentlemen. They be for the most part farmers unto gentlemen, which with grazing, frequenting of markets, and keeping of servants not idle, by such means do come to such wealth that they are able, and daily do buy the lands of unthrifty gentlemen, and after setting their sons to the school at the universities, to the law of the realm, or otherwise, leave them sufficient lands whereon they may live without labour, do make their sons by those means gentlemen

The labourer.—The fourth kind of men are day labourers, poor husbandmen, yea merchants, and retailers which have no free land, copy-holders and all artificers as tailors, shoemakers, carpenters, brickmakers, masons, etc These have no voice nor authority in our commonwealth, and no account is made of them but only to be ruled, not to rule other, and yet they be not altogether neglected For in cities and towns, in default of yeomen, inquests and juries are empanelled of such people, and in villages they be commonly made churchwardens, aleconners, and many times constables.

The courtier.—To ride comely, to run fair at the tilt or ring, to play at all weapons, to shoot fair, to vault lustily, to leap, to wrestle, to swim, to dance comely, to sing and play of instruments cunningly, to hawk, to hunt, to play at tennis and all pastimes generally which be joined with labour, used in open place in daylight to do either some fit exercise for war, or some pleasant pastime for peace, be not only comely and decent, but also very necessary for a courtly gentleman.

Festivals.—It is now *Christmas* and not a cup of drink must pass without a carol, the beasts, fowl and fish, now come to a general execution, and the corn is ground to dust for the bakehouse and the pastry. A good fire heats all the house, and a full alms basket makes the beggars prayers

The masques and the mummers make the merry sport, musicians now make their instruments speak out, and a good song is worth the hearing. In sum it is a holy time, a duty in Christmas for the remembrance of Christ, and custom among friends for the maintenance of good fellowship

It is now *Easter Day*, and Jack of Lent is turned out of doors The fishermen now hang up their nets to dry, while the calf and the lamb walk toward the kitchen and the pastry. The March rabbit runs dead into the dish. The Indian commodities pay the merchant's adventure, and Barbary sugar puts honey out of countenance. The holy feast is kept for the faithful, and a known Jew has no place among Christians

Against *May Day* every parish town and village assembled themselves together, both men, women and children, old and young, and either going all together or dividing themselves into companies, they go to the woods and groves, some to the hills and mountains, where they spend all the night in pleasant pastimes, and in the morning they return bringing with them birch boughs and branches of trees to deck their assemblies withal But their chiefest jewel they bring from thence is their Maypole, which they

bring home with great veneration as thus: they have 20 or 40 yoke of oxen, every ox having a sweet nosegay of flowers placed on the top of his horns, and these oxen draw this Maypole which is covered all over with flowers and herbs bound around with strings from the top to the bottom, and sometimes painted with variable colours, with two or three hundred men, women and children following it with great devotion, and thus being reared up with handkerchiefs and flags streaming on the top, they straw the ground about, bind green boughs about it, set up summer halls, bowers and arbours hard by, and then they fall to banquet and feast, to leap and dance about it, as the heathen people did at the dedication of their idols, whereof this is a perfect pattern or rather the thing itself. (A Puritan Account.)

The state of the roads.—Now to speak generally of our common highways through the English part of the isle, you shall understand that in the clay soil they are often very deep and troublesome in the winter half.

Whereof by authority of parliament an order is taken for their yearly amendment, whereby all sorts of common people do employ their work for six days in summer upon the same. And albeit, that the intent of the statute is very profitable for the reparations of the decayed places, yet the rich do so cancel their portions, and the poor so loiter in their labours, that of all the six, scarce two good days' work are well performed and accomplished in a parish, on these so necessary affairs Besides this, such as have land lying upon the sides of the ways do utterly neglect to ditch and scour their drains and watercourses, for better avoidance of the winter waters, whereby the streets do grow to be much more gulled than before, and thereby very noisome for such as travel by the same. Sometimes also, and that very often, these days' works are not employed upon these ways that lead from market to market, but each surveyor amendeth such by-plots and lanes as seem best for his own commodity, and more easy passage unto his fields and pastures.

On the way (Cambridge to London) we passed through a villainous boggy and wild country, and several times missed our way because the country thereabouts is very little inhabited and is nearly a waste, and there is one spot in particular where the mud is so deep that in my opinion it would scarcely be possible to pass with a coach in winter or in rainy weather

In England towards the south and in the west parts, and from London to Berwick upon the confines of Scotland, *post horses* are established at every ten miles or thereabouts.

In the *inns* men of inferior condition use to eat at the hosts' table and pay some sixpence a meal, but gentlemen have their chambers and eat alone, except perhaps they have consorts and friends in their company and of their acquaintance

English passengers taking any journey rarely dine, especially in winter, and withal ride long journeys But there is no place in the world where passengers may so freely command as in English inns, and are attended for themselves and their horses as well as if they were at home, and perhaps better, each servant being ready at call in hope of a small reward in the morning Neither did I ever see inns so well furnished with household stuffs

If *ale houses* have a box brush or an old post, it is enough to show their profession. But if they be graced with a sign complete, it is a sign of good custom In these houses you shall see a history of Judith, Susanna, Daniel in the lions' den, or Dives and Lazarus painted on the wall It may be reckoned a wonder to see the house empty, for either the parson, churchwarden, clerk, or all are doing some church or court business usually in this place. It is well for the hostess if her ale be strong, her reckoning right, her house clean, her fire good, her face fair and the town rich or great, she shall never or seldom sit without chirping birds to bear her company

Coaches are not to be hired anywhere but in London, and howsoever England is for the most part plain, or consisting of pleasant hills, yet the ways far from London are so dirty, that hired coachmen do not ordinarily take any long journeys, but only for one or two days any way from London, the ways so far being sandy and very fair, and continually kept so by labour of hands. Sixty or seventy years ago coaches were very rare in England, but at this time pride is so much increased, as there be very few gentlemen of any account who have not their coaches, so as the streets of London are almost stopped up with them

For the most part Englishmen, especially in long journeys, use to ride upon their own horses

Carriers have long covered wagons in which they carry passengers from city to city: but this kind of journeying is so tedious, by reason they must take the wagon very early and come late to their inns as none but women and people of inferior condition or strangers (as Flemings with their wives and servants) use to travel in this sort

In all our inns we have plenty of ale, beer, and sundry kinds of wine, and such is the capacity of one of them, that they are able to lodge 200 or 300 persons and their horses at ease, and thereto with a very short warning make provision for their diet, as to him that is unacquainted withal may seem to be incredible.

London.—London is a large excellent and mighty city of business and the most important in the whole kingdom, most of the inhabitants are employed in buying and selling merchandise and trading in almost every corner of the world, since the river is most useful and convenient for this purpose, considering that ships from France, the Netherlands, Sweden, Denmark, Hamburg and other kingdoms, come almost up to the city, to which they convey goods and take away others in exchange. It is a very populous city so that one can scarcely pass along the streets on account of the throng

Now at London the *houses* of the citizens are very narrow in the front towards the street, but are built five or six roofs high, commonly of timber and clay with plaster, and are very neat and commodious within; and the building of citizens' houses in other cities is not much unlike this Great part of the towns and villages are built like the citizens' houses in London, save that they are not so many stories high, nor so narrow in the front towards the street Others of them are built in like sort of unpolished small stones, and some of the villages are of mere clay and covered with thatch, yet even these houses are more commodious within for cleanliness, lodging, and diet, than any stranger would think them to be Most of the houses in cities and towns have cellars under them, where for coolness they lay beer and wine Gentlemen's houses are for the most part built like those in the cities, which are stately palaces built in London by noblemen upon the river Thames of brick and freestone, whereof many yield not in magnificence to like buildings of other kingdoms.

In every street carts and coaches make such a thundering as if the world ran upon wheels; at every corner men, women and children meet in such shoals that posts are set up to strengthen the houses, lest with jostling one another they should shoulder them down Besides, hammers are beating in one place, tubs hooping in another, pots clinking in a third, water tankards running at tilt in a fourth Here are porters sweating under burdens, there merchants' men bearing bags of money. Chapmen, as if they were at leap frog, step out of one shop into another Tradesmen, as if they were dancing galliards, are lusty at legs and never still. All are as busy as country attorneys at an assizes

There are not only the *constables* with the *watchmen* in London, but also (as almost through this realm) most falsely abusing the time, coming very late to the watch, sitting



MAY-DAY REVELS

(Class Picture No 60 in the portfolio)

down in some common place of watching, wherein some falleth on sleep by reason of labour or much drinking before, or else nature requireth rest in the night These fellows think every hour a thousand until they go home every man to bed. "Good night, good night, God save the Queen," sayeth the constables' farewell. Eftsoons, after their departing, creepeth forth the wild rogue and his fellows, with picklocks, handsaws, long hooks, ladders, etc., to break into houses, rob, murder, steal and do all manner of mischief in the houses of true men. God grant that some of the watch be not the scouts of the thieves!

Theatres and Bear Gardens.—Without the city are some theatres where English actors represent almost every day comedies and tragedies to very numerous audiences, these are concluded with variety of dances accompanied by excellent music and the excessive applause of those present. These theatres are all built of wood

There is still another place built in the form of a theatre which serves for the baiting of bears and bulls They are fastened behind and then worried by those great English dogs and mastiffs, but not without great risk to the dogs from the teeth of the one and the horns of the other; and it sometimes happens they are killed on the spot. Fresh ones are immediately supplied in the places of those that are wounded or tired. To this entertainment often follows that of whipping a blind bear, which is performed by five or six men standing in a circle with whips, which they exercise upon him without mercy. Although he cannot escape from them because of his chain he nevertheless defends himself vigorously, throwing down all who come within his reach and are not active enough to get out of it, and tearing the whips out of their hands and breaking them. At these spectacles and everywhere else the English are constantly smoking the Nicotian weed, which in America is called *Tobaco*, and generally in this manner; they have pipes on purpose made of clay, into the further end of which they put the herb so dry that it may be rubbed into powder, and lighting it they draw the smoke into their mouths, which they puff out again through their nostrils like funnels. In these theatres fruits such as apples, pears and nuts according to the season are carried about, to be sold as well as wine and ale

Houses and furniture.—The greatest part of our building in the cities and good towns of England consisteth only of timber, for as yet few of the houses of the commonalty except here and there in the west country towns, are made of stone In the fenny countries and northern parts, houses are set up with a few posts and many raddes—where for lack of wood they are forced to continue this old manner of building. The Spaniards in Queen Mary's days wondered and said, "These English have their houses made of sticks and dirt, but they commonly fare as well as the king"

Every house is inwardly divided into sundry rooms above and beneath, and where plenty of wood is they cover them with tiles, otherwise with straw, sedge or reed, except some quarry of slate be near

The walls of our houses on the inner sides in like sort be either hanged with tapestry, arras work, or painted cloths, wherein either divers histories, or herbs or beasts and such like are stained, or else they are ceiled with oak of our own, or wainscot brought out of the eastern countries, whereby the rooms are not a little commended, made warm, and much more close than they would otherwise be As for stores we have not hitherto used them greatly, yet they do now begin to be made in divers houses of the gentry and wealthy citizens The furniture of our houses also exceedeth and is grown in a manner even to passing delicacy Certes in noblemen's houses it is not rare to see abundance of arras, rich hangings of tapestry, silver vessels, and so much other plate as may furnish sundry cupboards to the sum of a thousand or two thousand pounds at

SKETCHES FOR THE BLACKBOARD



SQUARE-TOED SLASHED SHOE
WOMAN'S HEADDRESS (ELIZABETHAN)

ELIZABETHAN SHOE WITH HEEL

TUDOR FLAT CAPS
WOMAN'S HEADDRESS (HENRY VIII)

COACH OF QUEEN ELIZABETH'S MAIDS

the least. Likewise in the houses of knights, gentlemen merchants, and other wealthy citizens, it is not rare to behold their great provision of tapestry, Turkey work, pewter, brass, fine linen and costly cupboards of plate worth 500 or 600 or 1,000 pounds Even the artificers and farmers have for the most part learned to garnish their cupboards with plate, their joined beds with tapestry and silk hangings, and their tables with carpets and fine napery

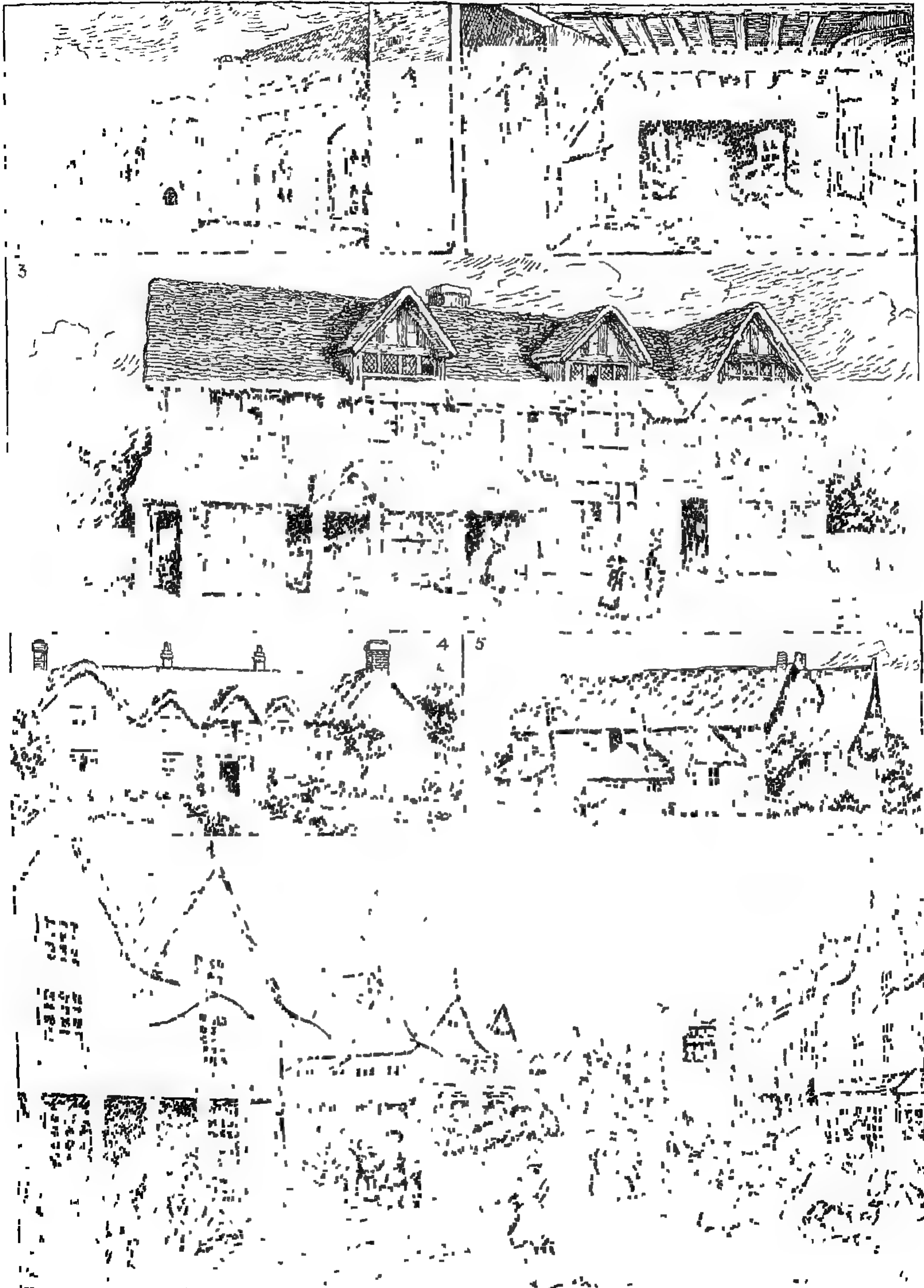
Old men have noted three things in England to be marvellously altered One is the multitude of chimneys lately erected, whereas in their young days there were not more than two or three in any town except the religious houses and the manor houses But each made his fire against a reredos in the hall, where he dined and dressed his meat The second is the great amendment in lodging for our fathers, yea and we have lain full oft on straw pallets, on rough mats covered only by a sheet, under coverlets made of coarse threads and a good round log under their heads instead of a bolster or pillow. It were so that our father had within seven years of his marriage purchased a mattress or flock bed, and thereto a sack of chaff to rest his head upon, he thought himself to be as well lodged as the lord of the town.

The third thing they tell of is the exchange of vessels, as of wooden platters into pewter, and wooden spoons into silver or tin. For so common were all sorts of wooden stuff in old time, that a man should hardly find four pieces of pewter in a good farmer's house; whereas in my time the farmer has a fair garnish of pewter on his cupboard, three or four feather beds, so many coverlets and carpets of tapestry, a silver salt, a bowl for wine and a dozen of spoons

Food and diet.—In number of dishes and change of diet the nobility of England do most exceed. There is no day that passeth over their heads wherein they have not only beef, mutton, veal, lamb, kid, cony, capon, pig, or so many of them as season yieldeth, but also some portion of the red or fallow deer, besides great variety of fish and wild fowl.

Also they have jellies of all colours mixed with a variety in the representation of sundry flowers, herbs, trees, forms of beasts, fowls, and fruits, and thereunto marchpane, (marzipan) wrought with no small curiosity, tarts of divers hues and sundry denominations, conserves of old fruits foreign and home bred, sugar plums, quince, marmalades, sugar-bread, gingerbread, and sundry outlandish confections altogether seasoned with sugar Of the potato and such roots as are brought out of Spain, Portugal and the Indies to furnish up our banquets I speak not With us the nobility, gentry and students do ordinarily go to dinner at eleven before noon and to supper at five or between five and six The merchants dine and sup seldom before 12 at noon, and six at night The husband-men also dine at high noon, and sup at seven or eight

Rogues and vagabonds.—With us the poor is commonly divided into three sorts, so that some are poor by impotency, as the fatherless child, the aged, blind and lame, and the diseased person that is judged to be incurable, the second are poor by casualty, as the wounded soldier, the decayed householder, and the sick person wasted with grievous and painful diseases; the third consisteth of the thriftless poor, as the rioter that hath consumed all, the vagabond that will abide nowhere but runneth up and down from place to place, and finally the rogue Some of these having sound and perfect limbs do notwithstanding sometimes counterfeit the possession of all sorts of diseases, applying corrosives and poisons to their bodies, and thereby raising pitiful and odious sores, and move the hearts of the goers-by to yearn at their misery, and thereupon bestow large alms upon them Divers times in their apparel also they will be like serving men or labourers, often times they can play the mariner and seek for ships they never lost The punishment that is ordained for this kind is very sharp, and yet it cannot restrain them from their gadding, wherefore



Houses in Tudor and Stuart Times

the end must needs be martial law to be exercised upon them as upon thieves, robbers, despisers of all laws, and enemies to the commonwealth and welfare of the land.

But for their idle roguing about the country the law ordaineth this manner of correction The rogue being apprehended, if he is convicted for a vagabond, is immediately judged to be grievously whipped and burned through the gristle of the right ear, as a manifestation of his wicked life and due punishment received for the same, unless some honest person will be bound in recognizance to retain him in his service for one whole year. If he be taken a second time and proved to have forsaken the said service, he shall then be whipped again, bored likewise through the other ear, and set to service from whence, if he depart before the year be expired and happen afterwards to be attacked again, he is condemned to suffer death as a felon Every one that harboureth them or aideth them with meat or money is taxed, for every time that he doth succour them as it shall please the justices of peace to assign Sometimes the beggars feign themselves to have been mad and kept in Bethlehem, and will say how piteously and most extremely they have been beaten and dealt withal. Some of these be very pleasant and will dance and sing, some others be as cold and reasonable to talk withal. They beg money, either when they come at farmers' houses they will demand bacon, cheese or wool or anything that is worth money, and if they espy small company within they will with fierce countenance demand somewhat, where for fear the maid will give them largely to be rid of them.

Five o'clock in the morning in Tudor times.—It is now five of the clock and the sun is going apace upon his journey: and fie luggards who would be asleep; the bells ring to prayer and the streets are full of people and the highways are stored with travellers; the scholars are up and going to school and the rods are ready for the tyrants' correction; the maids are at milking and the servants at plough and the wheel goes merrily while the mistress is by, the capons and the chickens must be served without door and the hogs cry till they have their swill, the shepherd is almost gotten to his fold and the herdman begins to blow his horn through the town, the blind fiddler is up with his dance and his song, and the ale house door is unlocked for good fellows; the hounds begin to find after the hare, and horse and foot follow after the cry; the traveller is now well on his way, and if the weather be fair walks with the better cheer, the carter merrily whistles to his horse and the boy with his sling casts stones at the crows; the lawyer now begins to look on his case

Note on the Plate "Houses in Tudor and Stuart Times."—(1) The front of the fourteenth-century hall of Penshurst Place, Kent (2) Kitchen in Shakespeare's birthplace. (3) The half timber house in Henley Street, Stratford-on-Avon, in which Shakespeare was born, 1564 (4) An Elizabethan farmhouse at Hayes Barton, near Sidmouth, the reputed birthplace of Sir Walter Raleigh This picturesque building has a thatched and gabled roof, mullioned windows, and a gabled porch. It is interesting to observe that the shape of the building is in the general form of a capital letter **E**, the short middle stroke of the letter being represented by the porch and entrance hall It has been suggested that the builders of Elizabeth's time purposely erected their dwellings in this form as a compliment to their Queen, but the shape is really the result of the gradual changes in house-building which had been going on for many centuries. The hall, which was once the principal room of a house, gradually got smaller and smaller as other separate apartments were added to it, until it finally became, in most houses, merely an *entrance* hall, the least important part of a dwelling. (5) Bunyan's meeting-house, Gravel Lane, Southwark, built in 1687 (6) Tetbury market place, from an old drawing, with the old market house (now destroyed) built in 1655.

FOURTH YEAR'S COURSE OF HANDWORK FOR THE HISTORY LESSONS

THE COMING OF THE NORMANS

The object of the handwork exercises illustrated on the accompanying plate is to utilise paper cut-outs, based upon figures from the Bayeux Tapestry, to form two attractive friezes. For mounting purposes, large sheets of white cartridge paper, of imperial size, joined to form a continuous strip, may be used A better effect will be attained, however, if a roll of plain wallpaper of a buff shade be used, as the wallpaper will give a finished result more in keeping with the appearance of faded linen.

The first frieze is to show the Conqueror's fleet in full sail for England. It will be noticed that the boats are similar in general shape to the Viking boats described in the preceding volume. Fig 1 A provides the teacher with a copy that may be traced directly from the plate or copied on a larger scale The boat shape should be cut bodily from black paper, and afterwards strips of red and yellow paper should be cut for its decoration by pasting them on to the black hull. The sail is cut from yellow paper, and pieces of black, red and white paper are stuck on as shown by the different types of shading in the diagram A narrow strip of dark brown or black paper is cut to serve as a mast.

The various parts of the ships having been made by the children, the next step is to prepare the background to receive their work On the lower edge of the long sheet, two or three thick wavy lines (Fig 1 B) are drawn with black or dark blue pastel or water colour, and a thick black line is drawn at the top and the bottom to mark a boundary. The ships are now stuck to the background in the following order, hull first, sail next and lastly the mast To each ship a number of small shields are stuck, and also a steering oar at the stern Rigging may be indicated by one or two black lines on each ship.

The next frieze is made in the same manner, a horizontal boundary line being drawn at the top and the bottom of the sheet. Here is shown a part of the actual Battle of Hastings as depicted on the Tapestry. Again the shapes may be traced from the plate or enlarged Fig 2 A shows the foot soldier. His shield, sword, helmet and legs are yellow, his armour blue, his feet black. The horseman is illustrated in Fig 2 B His horse is tinted dark brown, the harness yellow and the back of the shield black Fig. 2 C shows how the parts are mounted—the horsemen on one side and the foot soldiers on the other There is no need to cut out the spears shown in the diagrams, for they would be too thick and clumsy. These, as well as a few arrows in the air, are best added in ink, Indian ink being used for preference

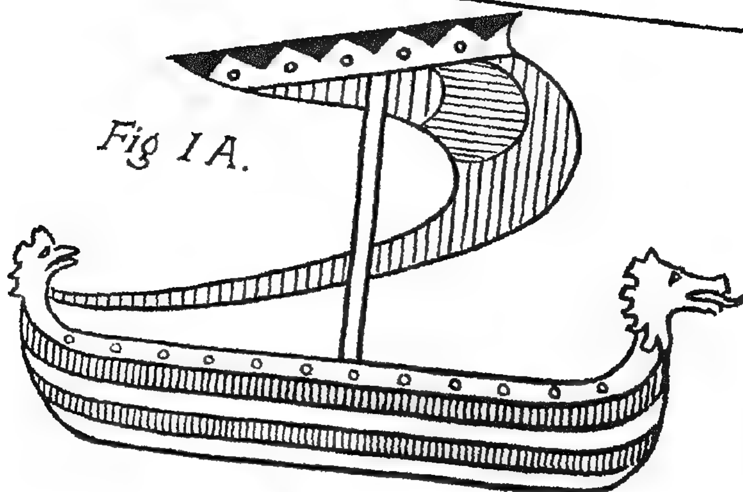










PLATE I

A Frieze Based on the Bayeux Tapestry

Fig 1B The Coming of the Normans

Fig 2C Scene from the Battle of Hastings

THE NORMANS. I.

The Normans were great builders of castles, and numerous examples of their art and skill exist to-day to testify to this It is fitting, therefore, to see that the children are familiar with the layout of a Norman castle; and, should there be one in the immediate vicinity of the school, an educational visit might be made to study it

The handwork exercise described in this lesson is that of the making of a Norman castle, the work is to be done by selected groups of children under the guidance of team leaders

The first step in the construction of the castle is to decide upon a ground plan A suitable one is appended in the diagram (Fig. 1), and this should be sketched on to a large sheet of fairly stout card, such as the top or bottom of a big cardboard box, or a show-card. The inner bailey is shown at X and the outer bailey at Y The position of the keep is indicated by dotted lines. It will be noticed that rounded portions are cut away at each corner. The diameter of the corner towers should now be decided upon—say $1\frac{3}{4}$ in A disc of card is cut to this diameter and placed upon each corner in succession, as a pattern to be drawn round for cutting out the cardboard shape. The tiny flaps shown will have to be stuck to the flat baseboard.

The base having been prepared, the children are ready for adding the corner towers Their construction is seen in Fig 2 A It must be remembered in planning that the length of the card, exclusive of the fixing flap, must be approximately $3\frac{1}{7}$ times the length of the pre-arranged diameter mentioned above The flap is *not* scored in this instance: the card is simply bent round and stuck. The top of each tower is closed by sticking a circle of card inside (Fig 2 B) about $\frac{1}{2}$ in from the top Each tower is placed in a corner, and stuck to the flaps previously added to the baseboard Next, the walls of the castle are prepared As will be seen in Fig 2 C, these are straight lengths of card having flaps at the end and base, and are cut so as to be shorter than the corner towers They are stuck to the towers and to the base on each side of the castle except at the entrance (The entrance is set back a little, and the two walls may be stuck into position after it has been made)

The entrance towers are hexagonal in development (Fig 3 A) and are closed at their ends by hexagonal shapes of card, Fig. 3 B. In the short middle wall joining the two towers, a rounded gateway is either cut or painted, Fig 3 C. The completed entrance towers are stuck to the baseboard and are joined up with the entrance wall and two side walls

For the keep (Fig. 4) a tall cardboard box is used A square is cut from each corner, and working from this as a guide, the four corners of the upright sides are removed Double-edged flaps must now be cut from stout paper and stuck to all these cut edges, as shown by the shading in the diagram Four square towers are next made, and one of these is fixed at each corner as seen in the sketch The keep is placed in position and joined up to the left-hand wall by another wall bearing a communicating gate

The completed castle (Fig 5) is painted a stone colour, details being added in black or dark brown The courtyards are sprinkled with sand or dark green pastel dust.

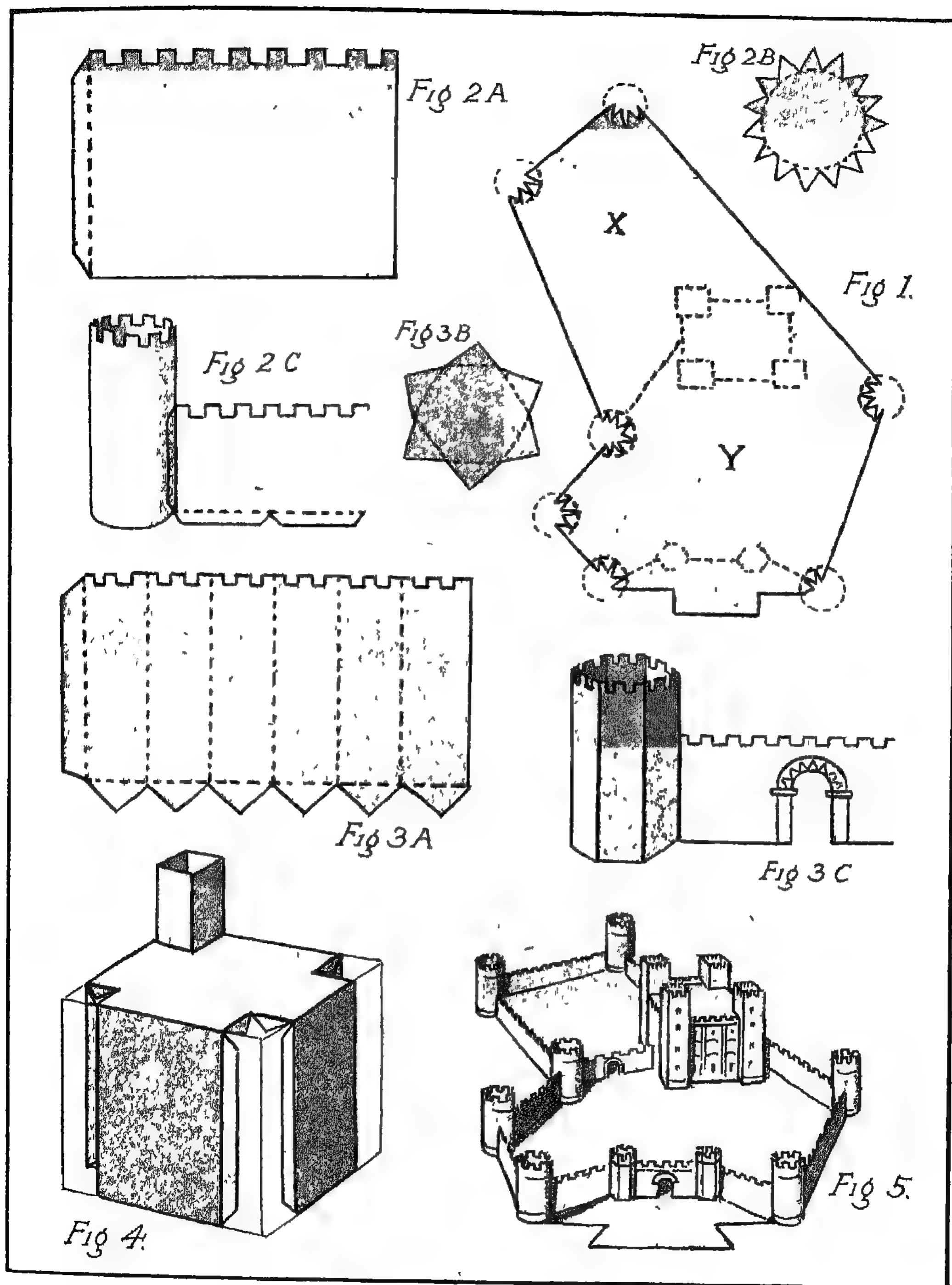


PLATE II

Norman Castle A Group Project in Cardboard

THE NORMANS. II.

In various parts of this encyclopaedia, different types of shields have been described. Old manuscripts and drawings give us a very clear idea as to the character of the Norman shield. In general shape it resembled a rounded kite-form and it was somewhat long in proportion to its breadth, so that it provided good bodily protection. In making a shield of this nature, the children first fold a piece of paper (Fig. 1 A) and from it prepare the preliminary shape. This is opened out and placed on a sheet of stout strawboard, and the outline is drawn round it. The shape is now cut from the strawboard and its edges are smoothed with the striking surface of an ordinary match box. The flat shield is given a coat of thick brown paint. While it is drying, the simple design is drawn on the original paper. Each of the four sections is traced on to a sheet of yellow or orange gummed paper, the pieces are cut out and stuck to the shield; one or two circles of the paper are also added as shown.

In 1138, David I. of Scotland, an uncle of Matilda, took up her cause and invaded Northumberland. A notable battle was fought at Northallerton in which the Scots were defeated In the midst of the army was a cart upon which was erected a standard. For this reason the battle is always known as "The Battle of the Standard." The next handwork exercise to be described is the making of a model of this standard. An early thirteenth-century manuscript gives us a good idea of its appearance. A long cardboard pole, square in cross-section, is planned, Fig. 2 A This is provided with a square top. at the base four triangular fixing-flaps are left; two slits are made near the top to receive the standard proper, Fig 2 A. The children must be careful where they make these cuts, and the visualising of their position will form a useful exercise They must be cut in such a position that they are facing each other when the central pole is folded. The slits should be just large enough to allow the banner to slip through, so the actual banner might be cut out before the slits are made. A full-size drawing of the banner is given in Fig. 2 B, so that, if wished, it may be traced directly from the plate.

The next step is for the children to prepare the cart for the model For this, a match-box case may be used, after it has been covered with brown paper. Four long tabs are added, and a square hole, a little larger than the dimensions of the pole, is cut from the centre of the box. In order to do this satisfactorily a piece of wood should be placed inside the box and the cutting done with a knife, pressing down upon the wood. The shaft is thrust through the hole and the triangular flaps are turned outwards and stuck to the lower side of the box to secure a firm joint Two splints of wood are thrust through the axle tabs, and four wheels are fitted to their ends To complete the model, a cross is fixed at the top of the shaft. Two of these crosses are cut out, each provided with a small basal flap, the crosses are stuck together, and the fixing flaps are bent in opposite directions, Fig. 2 D. In the completed model (Fig 2 E) the cart and shaft are tinted dark brown, the wheels black and red, the cross yellow.

Fig 3 shows a cut-out of a Norman soldier The arms and armour are coloured steel grey, the belt yellow, and the legs royal blue, with yellow strappings.

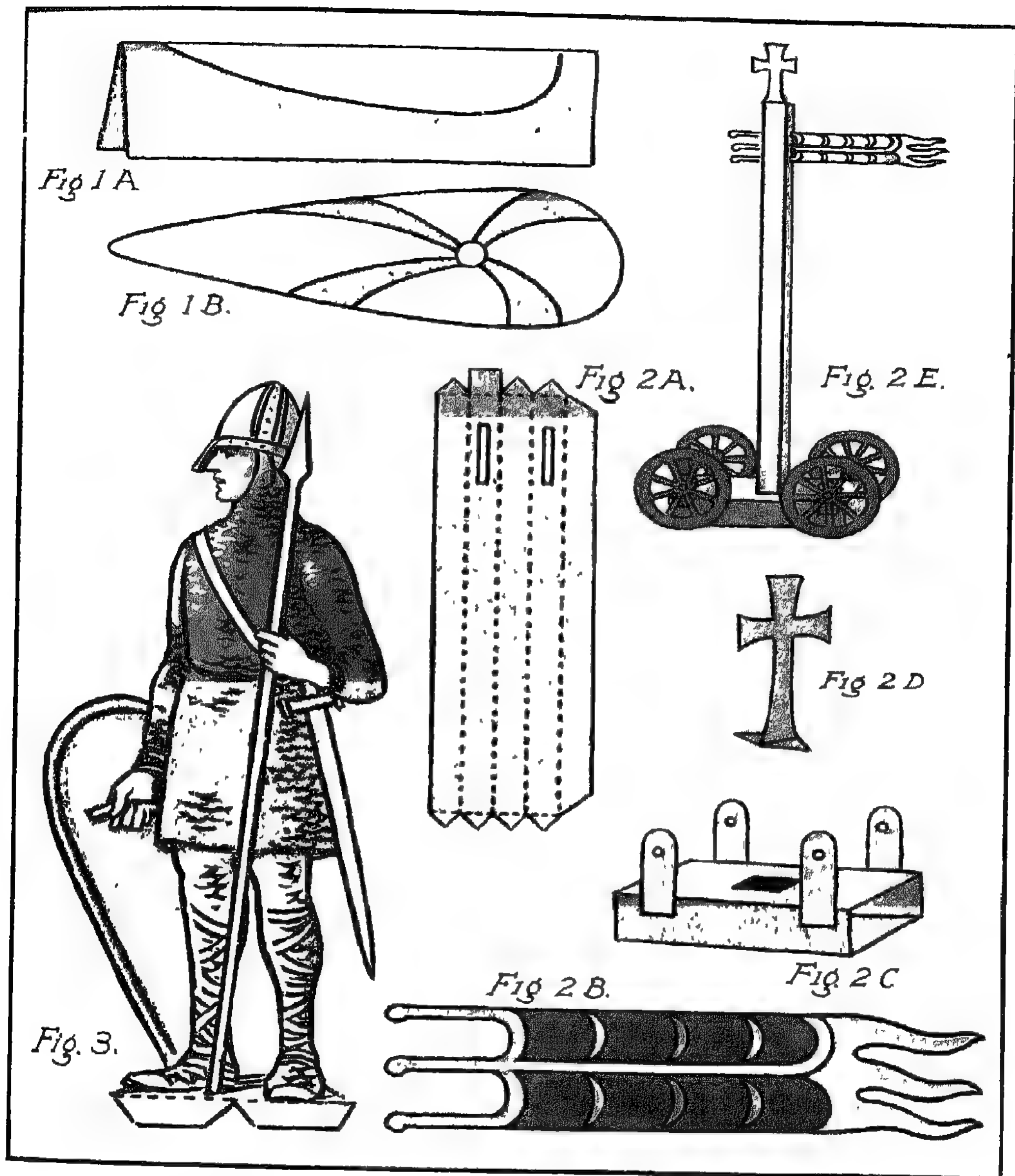


PLATE III

Fig 1 Norman Shield in Card with Paper Appliqué

Fig 2. The Standard of the "Battle of the Standard" made from a Match Box and Cardboard

Fig 3 Cut-out of a Norman Soldier

RELIGION AND THE CRUSADES

In this lesson the religion of the Middle Ages is considered In those days, it was the custom for religiously-minded enthusiasts to make a pilgrimage to the Holy Land, and wandering about England were a number of such pilgrims. Before setting out on their journey, an initiation ceremony was undergone, in the course of which the pilgrim received from the priest his staff, his scrip and his habit and his characteristic hat.

In addition to the pilgrims there were various military orders such as the Knights Templars, who were pledged to wage war against the infidels and to escort parties of pilgrims on their way to the Holy Places

The first handwork exercise described on the plate opposite is the making of a pilgrim's hat, Fig 1 This was circular in shape and might be decorated round its brim with scallop shells The scallop shells on the hat showed that the pilgrim had crossed the sea and visited the shrine of St James at Compostella. To make the hat the children take a ball of clay in their left hand and, by pressing the right thumb into the mass, form a cup-shape which is afterwards modelled a little at the top so that the whole becomes slightly conical The brim is modelled separately and fixed on to the crown. Finally, a number of small scallop shells are modelled and fixed around the hat as shown in the drawing, Fig 1

The pilgrim's staff to aid him on his journey was a stout stick of good length, provided with a knob at one end and a hook or a staple The latter was used to carry his water bottle, or a bundle containing his meagre possessions To make this model (Fig 2) a kindergarten stick is taken to one end of it a clay knob is fixed and a small wire hook is thrust into the stick To complete the model, a tiny water bottle is modelled and suspended from the hook by a loop of thread.

The pilgrim's scrip, in reality a satchel, provides a simple needlework exercise for the girls, Fig 3 It should be made in dark brown or grey material, and the customary badge, a scallop shell, should be cut from white material and sewn on to the bag in appliqué

The pilgrim's water bottle also frequently assumed the shape of the scallop shell, Fig 4 To make such a model in clay, first model a round bottle of regular shape. After this a number of spindle-shaped lengths are placed on its curved surface and worked into the general mass of the body of the bottle by smoothing gently with the little finger To complete the model, two curved handles are fitted, and to these a loop of string is tied

Fig 5 A shows the shape of the Knight Templar's cross which was carried at the end of his staff. This forms a good paper-cutting and drawing exercise for the children to work out, using a square as the basis The sides of the square are divided into three to produce the octagon, after which a paper shape may be used to produce the symmetrical arms of the cross Made on a small scale this might be thrust into a stick for a Templar's staff, Fig 5 B

A cut-out of a Templar is given in Fig 6 In tinting, the armour should be coloured a bluish grey, the tunic brown, the flowing mantle Chinese white with a red cross over the breast, and the belts yellow

The palmer should be coloured in sober hues of brown or grey, and the scallop shells in cream, Fig. 7.

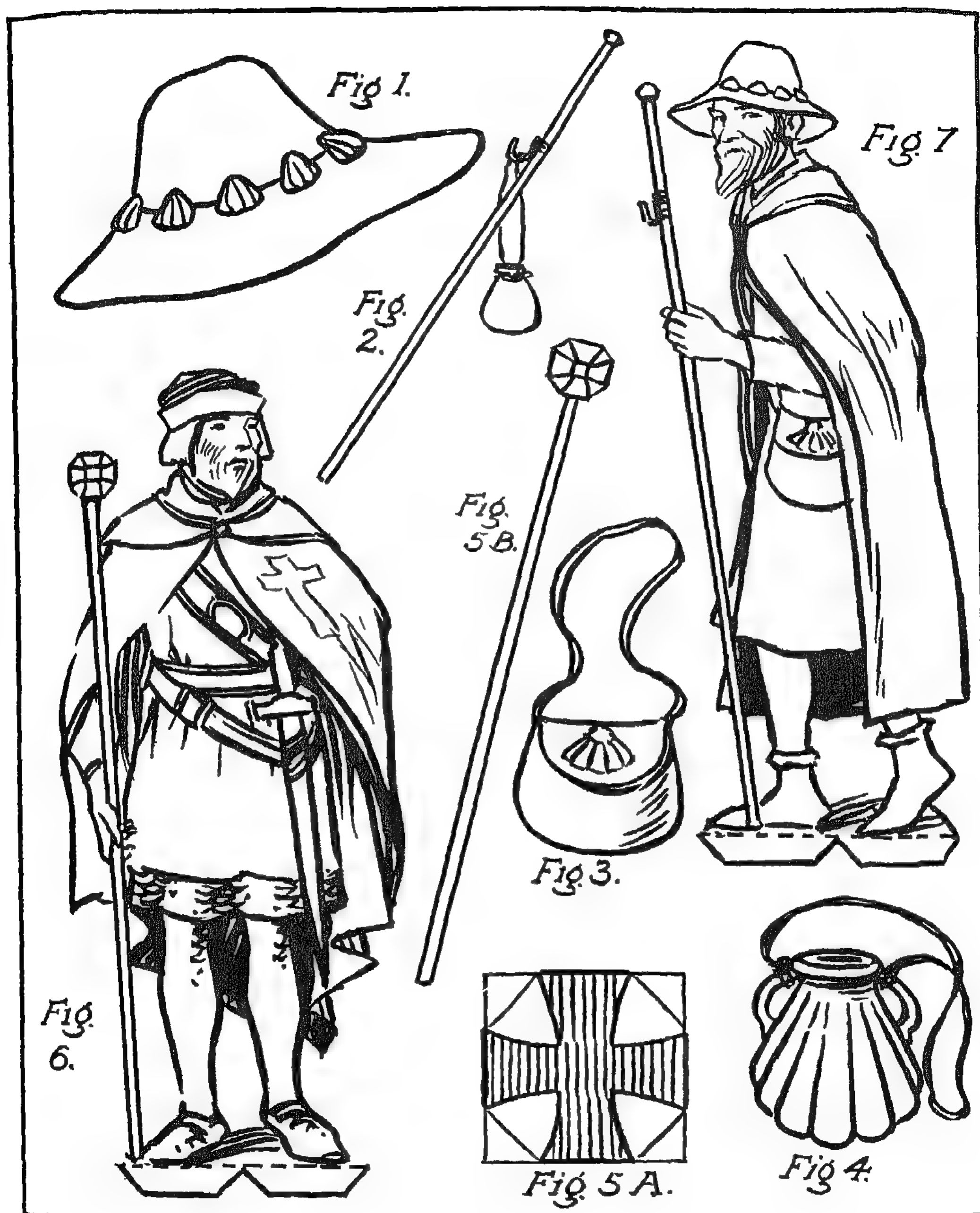


PLATE IV

Fig 1 Pilgrim's Hat in Clay
Fig 2 Pilgrim's Staff and Bottle
Fig 3 Pilgrim's Scrip in Needlework
Fig. 4 Pilgrim's Water Bottle in Clay
Fig 5 Templar's Staff in Paper-Cutting and Card
Fig 6. Cut-Out of Templar
Fig 7. Cut-Out of Pilgrim

EARLY ENGLISH ARCHITECTURE

Mention has already been made of the buildings of the Normans. At the end of the twelfth century was seen the birth of another architectural epoch, that of Early English. The sturdy massiveness of the round-arched Norman doors and windows were replaced by larger and more beautiful ones with pointed arches and slender columns. The windows showed a marked tendency to narrowness The decoration changed slowly from the characteristic Norman chevron or zig-zag to the beautiful dog-tooth—capable of lovely adaptations in the hands of skilful builders Lincoln Cathedral was one of the first great examples of Early English architecture the cathedrals of Salisbury and Wells were products of the reign of Henry III.

The handwork exercise to illustrate this lesson is somewhat different from the others which have so far been described in the course. The project is to build up an Early English window by superimposition of three thicknesses of cardboard, thick strawboard for preference By placing one upon the other, the suggestion of relief will be achieved. It might be mentioned before proceeding that if the local church can supply examples, they should be utilised for this purpose, the children paying an educational visit with pencils and notebook.

The starting-point is the sketch. the children must make a drawing of the three lancet windows In order to aid them to secure symmetrical shapes, paper patterns might be cut on folded paper, to produce one large and one small window. (The latter is used twice, once on each side of the larger one.) Next, two rectangular shapes of thick strawboard are cut of the same size, and on to one of these the three windows are drawn, Fig. 1 A. With the point of the knife, the windows are cut out. It will no doubt be found that there will be some irregularity when the task is finished, but the edges of the windows may be smoothed in the following manner Wrap a piece of fine glass paper round a ruler or similar flat piece of wood, hold the cardboard horizontally in the left hand and the glass paper vertically in the right hand, working it up and down to smooth the rough edges.

The next step (Fig 1 B) is to make the outside modelling of the windows by tracing. As will be seen, this is a skeleton shape and is cut from the third piece of cardboard which was prepared This again is cut with the point of the knife and smoothed with the glass paper Now comes the task of assembly With some strong adhesive the three layers are glued together, first the windows to the base, then the skeleton model to the front of the windows proper, Fig 1 C Finally, the completed model is painted a drab stone colour, except for the window spaces, which are tinted to represent stained glass A sheet of glass, with thin tinted tissue paper beneath it, may be used in place of the baseboard if wished.

Another appropriate exercise in this connexion is the modelling of dog-tooth decoration in clay The starting point is the pyramid, Fig 2 A. This is incised with the modelling tool as shown in Figs 2 B and 2 C The completed parts are assembled to form a moulding, which is bordered with rolls of clay, Fig 2 D

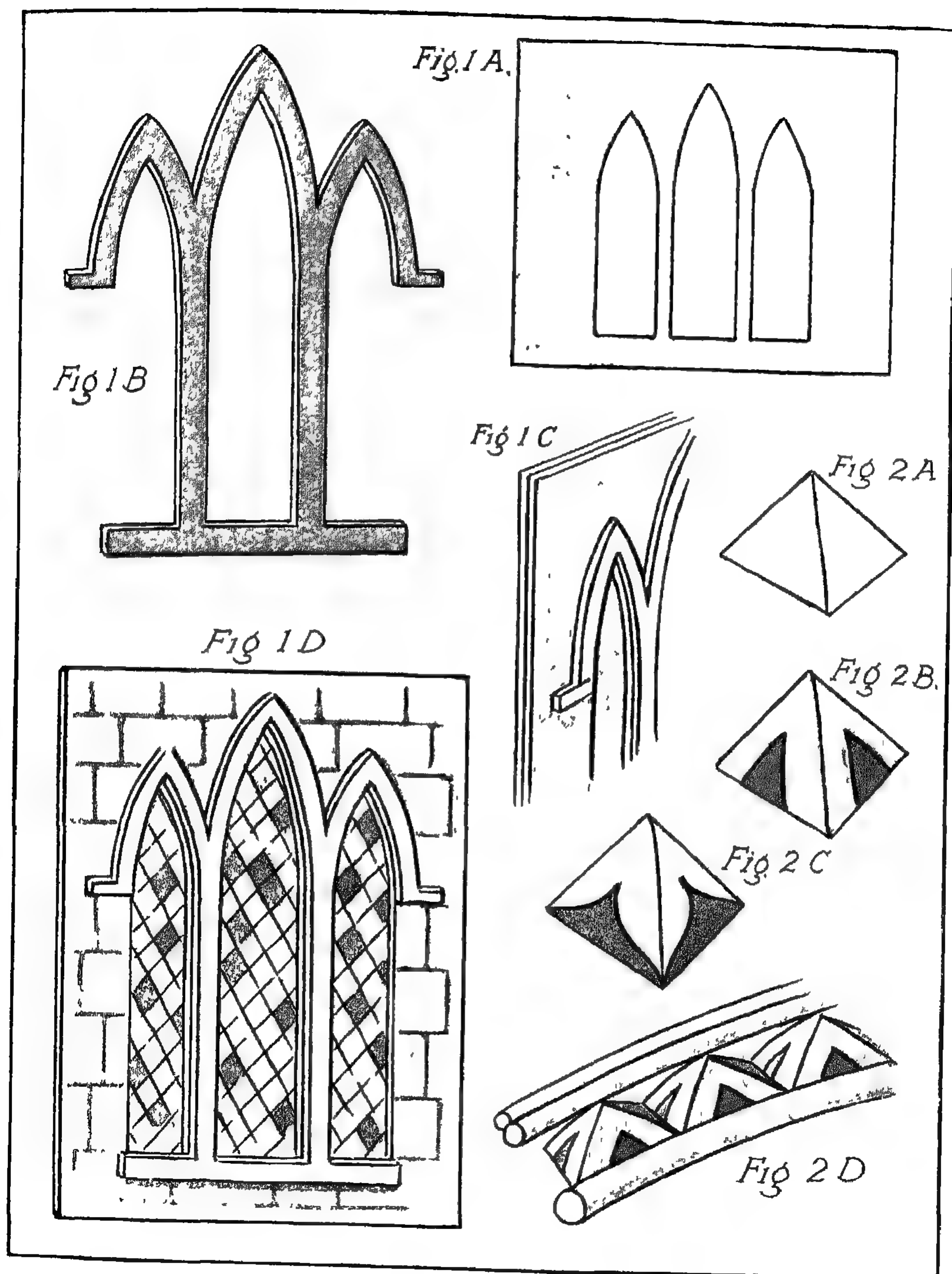


PLATE V

Fig 1 Early English Architecture—Window made from Superimposed Card
Fig 2 Dog-Tooth Ornament in Clay

EDWARD I.

In 1296 Edward won a decisive victory over the Scots at Dunbar Balliol was imprisoned in England, and Edward reigned as king of Scotland as well as of England From Scone was carried off the Stone of Destiny on which all the former kings of Scotland had been crowned. The stone was supposed to have been Jacob's pillow in Bethel It was placed in a stately throne which became and still remains the coronation chair of the kings and queens of England

The making of the coronation chair provides an attractive handwork exercise For this purpose, thin white card is best, on account of the ease with which this may be manipulated Fig. 1 A shows how the body of the chair is developed in the flat. In order to secure a good proportion in the finished result, the width across the back should be slightly more than that of the sides. In order to ensure that the two curves of the sides shall be exactly symmetrical, a paper shape or template should be cut and traced round It will be noticed that along the top tiny triangular fixing-flaps are cut, to enable strips of paper to be attached in order to give solidity to the model After having been drawn and cut out, the chair is folded at the sides and bottom, and the latter is stuck securely.

The next step is the fixing of the seat of the chair and the ledge to hold the Stone of Destiny For these, two shapes similar to that seen in Fig. 1 B will be required The dimensions of the rectangle shown are determined by reference to the chair They will equal those of ZX and XY respectively The rectangular flap seen at the lower edge of Fig. 1 B forms a solid front edge to the seat. One of the two shapes is fixed about halfway up the chair, the other at the bottom

Fig 1 C shows the completed model Along the small triangular flaps at the top, strips of paper or thin card, about ¼ in wide, are stuck. The pieces attached to the arms are both made a little too long and are curled round at their projecting ends The strip attached to the triangular top portion should be bent at the middle, and in addition have its edges rounded or "scalloped" Two decorative finials should be fixed, one at each corner at the top, four tiny clay or plasticine lions should be fixed at each corner of the base The Stone of Destiny may either be a rectangular block of clay, roughly modelled and sprinkled with sand, or of cardboard, coated with glue and similarly treated The girls of the class might make two tiny cushions in scarlet material Finally, the chair should be painted in brown and orange to resemble gilt.

The friars of the Middle Ages took a vow to renounce all worldly possessions and to spend their lives ministering to the poor, the sick and the helpless. Fig 2 A illustrates a cut-out of a Dominican friar In tinting this cut-out, the mantle and hood should be brown, the tunic white Fig 2 B shows a cut-out of a Franciscan friar In this instance the tunic should be tinted grey—school ink will serve admirably for the purpose

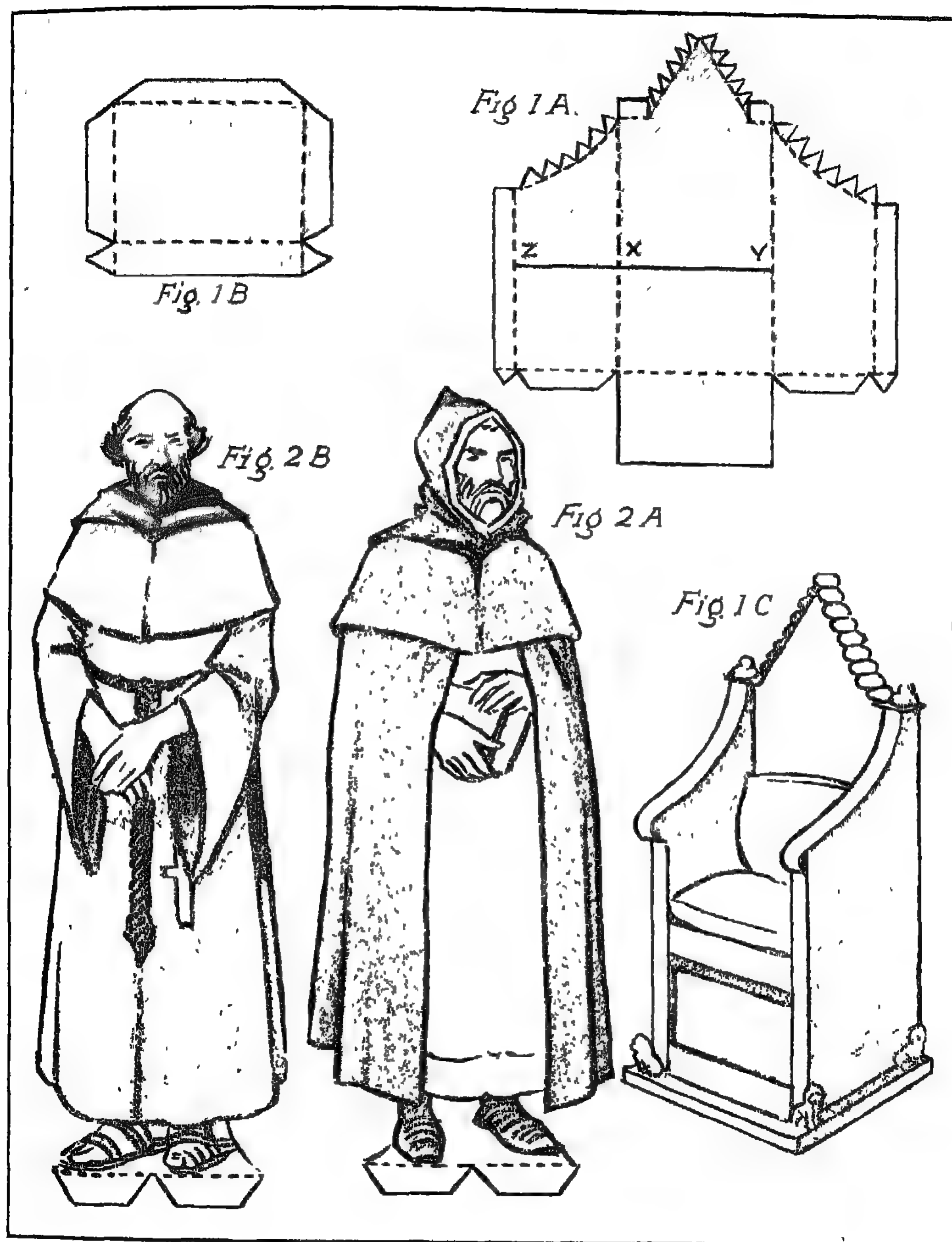


PLATE VI

FIG I — CORONATION CHAIR IN CARD
FIG 2A. — CUT-OUT OF A DOMINICAN FRIAR
FIG 2B — CUT-OUT OF A FRANCISCAN FRIAR

MEDIEVAL ENGLAND. I.

From contemporary prints and illustrations of the past, we are able to arrive at some conclusion as to what England was like in the Middle Ages The object of the accompanying plates is to describe how, as an exercise illustrative of history, the children shall make various models and assemble them on an appropriate baseboard, and before a suitable background produce, by co-operative work, a medieval town. The children have already had some practice in work of this nature, and here a higher standard must be expected both as regards the accuracy of the attempts and the artistic result By now the children will be more familiar with the brush, and this fact should show itself in their efforts.

The first step (Fig. 1) is for the class to produce a number of houses similar to the one shown Free choice should be allowed in the matter of dimensions, for it is desired in this instance that they shall be of varying sizes By putting stalls and benches outside, some of the houses might be made into typical shops necessary for a small community, e g the baker's, tinsmith's, chandler's, and so on. The children, too, should be allowed free choice in the matter of the representation of the roofs, some being tiled, some slated and some thatched. For the most part, the walls should be shown a whitish drab, with timbering. The timbering may be represented either by strips of dark brown or black paper pasted on to the walls, or alternatively the colours may be painted on to them as soon as the pale ground tint is dry. A pale greyish tint of blue is best for the windows, and dark brown is required for the doors

In the days of the Middle Ages, when travel was perforce by foot or by horse, the inn was one of the most important buildings of the town, seeing that its main function was to provide a place of lodging for weary travellers. One or two of the houses must be represented as inns Fig 2 shows how an inn sign may be attached to the walls, and at Fig 3 is shown the usual medieval inn sign of the brush This is made by tying a small bunch of raffia round a stick, thrusting the end into a piece of cork and gluing it to the house wall. Another type of inn sign is shown in Fig. 4 This was a wooden frame placed across the street with the sign suspended from its middle A frame is made by sticking two lengths of card together, leaving 1 in. at each end and folding back the two free ends to form flaps

Our town is to be a walled one, with a town gate The construction of the latter is seen in Fig. 5 It is really a tall narrow house, having a big door cut at the front and back The roof should be tiled by having small rectangles of paper painted red, fixed singly to overlap The class artist should prepare a coat of arms, paint it carefully, cut it out and paste it above the door The windows, too, might be similarly cut out and stuck into position, after they have been painted blue with black diagonal markings. Two long strips of card are cut and fixed to the sides of the gate and to the baseboard after they have been bent round as seen in the sketch of the finished model, Fig 6.

Fig 7 shows a number of small cut-outs of figures which should be tinted in reds, blues, greens, yellow and purple and fixed in natural positions within the town walls.

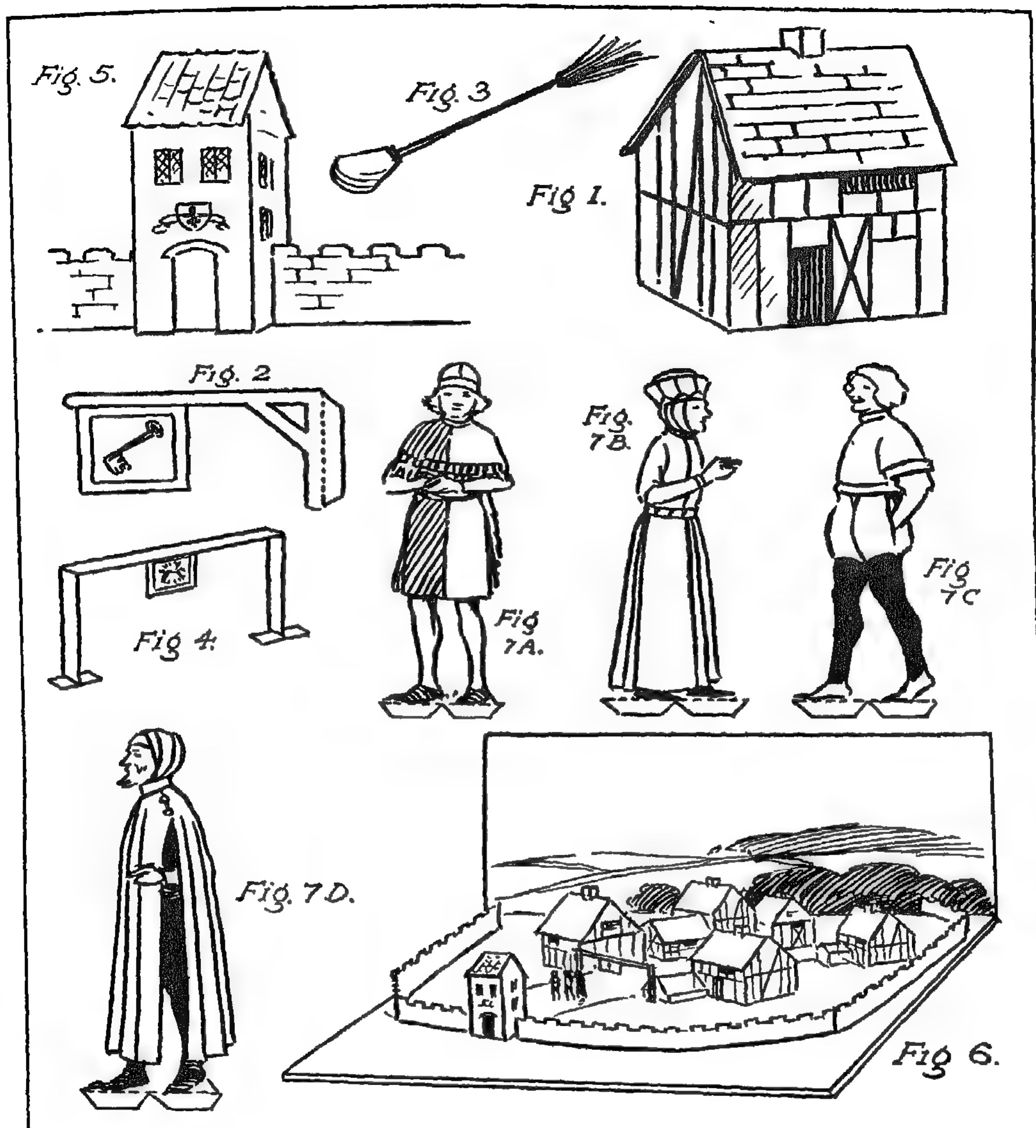


PLATE VII

FIG 1 MEDIEVAL HOUSE IN CARD
FIG 2 SHOP SIGN
FIG 3 INN SIGN
FIG 4 ALTERNATIVE INN SIGN
FIG 5 GATE HOUSE AND WALLS IN CARD
FIG. 6 GROUP ASSEMBLED
FIG 7 CUT-OUTS OF SMALL FIGURES

MEDIEVAL ENGLAND. II.

The old towns and villages of England had their own windmills for grinding the wheat grown in the immediate vicinity to provide flour for their population. The story of bread is a very old one and dates back to primitive times In the earlier volumes of this course, models of simple mills have been described, models of mills used when the milling process was in its infancy. The teacher might wish to revise former work at this juncture, linking up previous knowledge gained by the children with the new Possibly some of the models made by children in the lower part of the school can be used for illustrative purposes In our last lesson, the making of a group model of a medieval town was described One or two of the windmills made in this lesson might be introduced into the model of the town.

The windmill described is an early post-mill This mill was so called because it turned on a central post, built up on trestles set at an angle In this way, the miller was able, with the aid of his fellow workmen, to swing the mill round on its central post to take advantage of any wind that might be blowing. The usefulness of this feature is obvious, for the miller was, unlike the owner of modern mechanically propelled mills of to-day, entirely dependent upon wind for doing his work. It will be noticed also that the mill is well raised above the land on four piers.

Before attempting to construct the mill, each child should make a full-size sketch of the mill as seen in a side view. At this stage there is no need to mention the word "elevation," but the children should be led to see that from this sketch an idea may be gathered as to the dimensions of the model

The first step is to plan out the base of the mill, Fig 1 A. This is made by taking two narrow strips of stout cardboard, and fastening them together at the middle to form a cross The four piers are four ordinary match boxes covered with paper, and glued to the underside of the cross

The trestles are next arranged, Fig 1 B. Their construction is rather complicated and, as will be seen in the diagram, they incline at an angle of 45°. Either set squares may be used, or the children may produce their own "angle tester" by folding a piece of paper at right angles Four of these trestles are constructed, and one is glued on each of the four arms of the cross. Next, a circle of stout card, seen in dotted lines in Fig 1 C, is cut out, a hole is made in the centre, and the disc is stuck to the tops of the trestles.

The body part of the mill is planned as in Fig 1 D. Here a paper shape is used for the curved ends, which, when the mill is made up, takes a roof of paper which consists of a long rectangle bent at the apex and fastened to the tiny flaps. Two holes are made for sails and the central post, and pieces of cork are stuck behind these holes. When completed, a stick is thrust into the cork at the base to project, and this projecting stick fits into the trestle disc. Two sails (Fig 1 E) are cut, joined at right angles and fitted to the side To complete the model (Fig 1 F) a ladder and a long post are fitted, and the mill is painted in shades of brown

Fig 2 shows a cut-out of a medieval woman in typical fifteenth century head-dress. The garments are tinted in bright red, green and yellow.

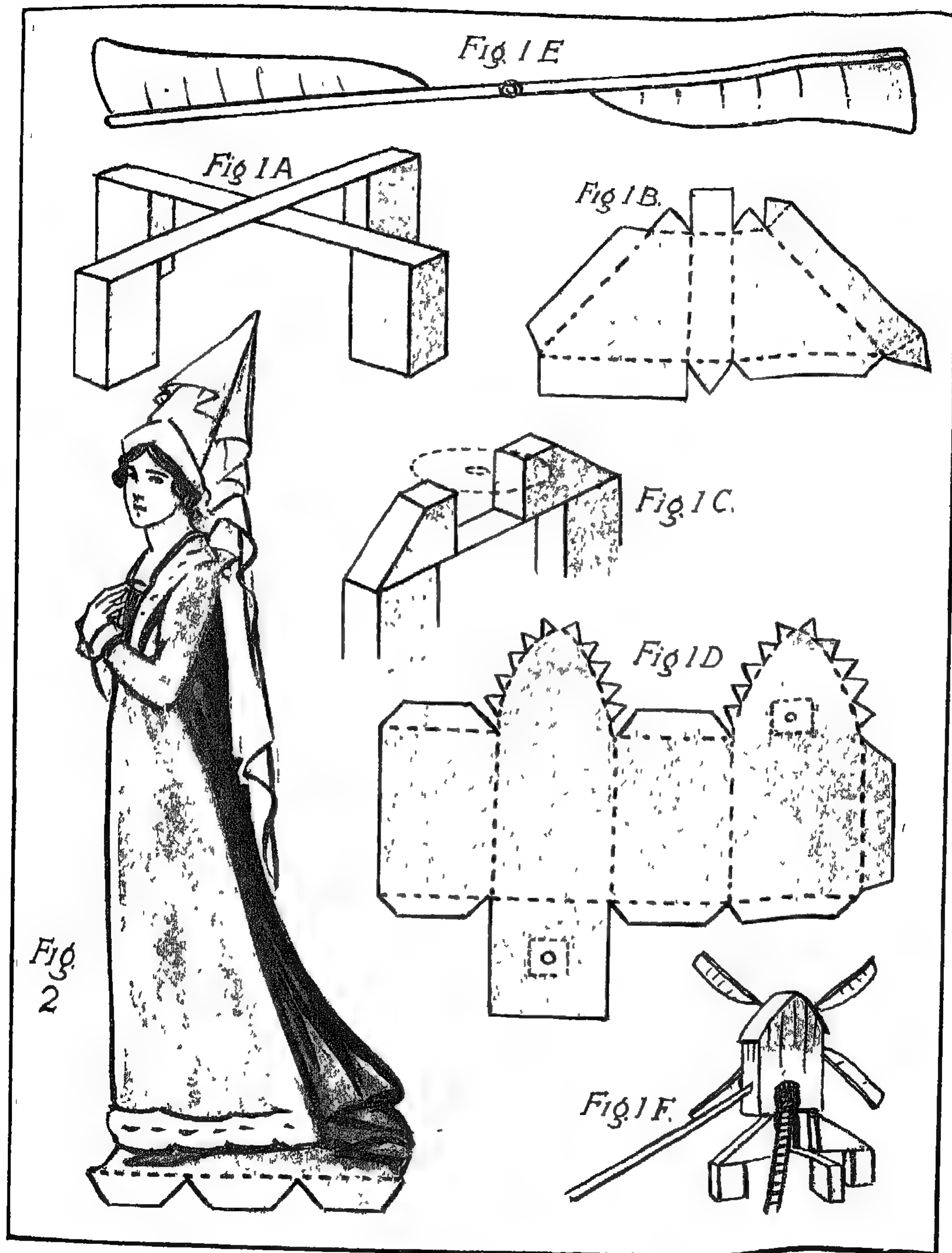


PLATE VIII

FIG I MEDIEVAL POST-MILL IN CARD
FIG 2 CUT-OUT OF A MEDIEVAL WOMAN

THE TUDORS AND STUARTS

In connection with their history, the children will probably learn something of the beginnings of the theatre in England In the course of their literature the story of Shakespeare will probably be dealt with, and the children will learn of the primitive way in which drama was presented in "Merrie England"

The early production of plays was largely in the hands of the trade guilds, who usually produced their pageants at the time of religious festivals. These were itinerant exhibitions, given on simple travelling "theatres" The theatres were movable platforms, usually of two stories, the upper one being the platform proper, which was reached by a ladder within The lower platform served as a dressing-room for the actors, who were screened off from public gaze by gaily tinted curtains hung round the sides of the structure. The children will doubtless see in the modern Punch and Judy show something of the early theatre of medieval and early Tudor times.

The first exercise on the accompanying plate illustrates the construction of one of these early theatres Thin cardboard is utilised for the purpose, and the development of the main structure is seen in Fig. 1 A. The body is composed of four long sides of equal width: it is provided with a square top, but no bottom, as the wheels will have to be fixed where the bottom should be It will be noticed that in the upper portion four rectangular spaces are removed, and in the lower region three similar spaces are cut away. The space intended to serve as the front of the stage has its corners rounded at the top edge. The placing of these spaces will provide the children with a useful exercise in accurate measuring It is recommended that the margins left round the spaces should be about ¼ in in width. As no bottom is arranged for in the body, two squares having flaps round them must be cut to form the platforms of the two stories The one for the upper platform should have at the back corner a square trap door cut from it. The platforms are fixed in the positions shown by the dotted lines AB and XY in the diagram Two splints of wood are cut and two wheels are fitted to fix through the four holes at the base Next, a pyramidal top is planned, Fig 1 B. A circle is drawn, and with the compasses opened to a distance a little less than the length of the theatre sides, four lengths are struck off the circle as shown The pyramid is attached to the theatre top, and separate pieces, shown in Fig. 1 C, are bent and stuck to the edges of the theatre as seen in the sketch of the completed model, Fig. 1 D. The tiny flags of bright colours are triangular pieces of paper bent round pins. A small ladder is fixed to lead from the lower story to the trapdoor, brightly tinted curtains of material are fixed to the lower openings by means of paper fasteners, the whole is painted gaily in reds, blues and yellows, and one or two small cardboard or plastic puppets are fixed to the upper platform

Figs 2 and 3 show characteristic figures of the Elizabethan and Stuart epochs, to be used as cut-outs for the Time Chart.



PLATE IX

Fig 1 Travelling Theatre of Tudor Days in Card
Fig 2 Cut-Out of an Elizabethan Woman
Fig 3 Cut-Out of a Stuart Man

A HOLDALL FOR MAPS AND DRAWINGS

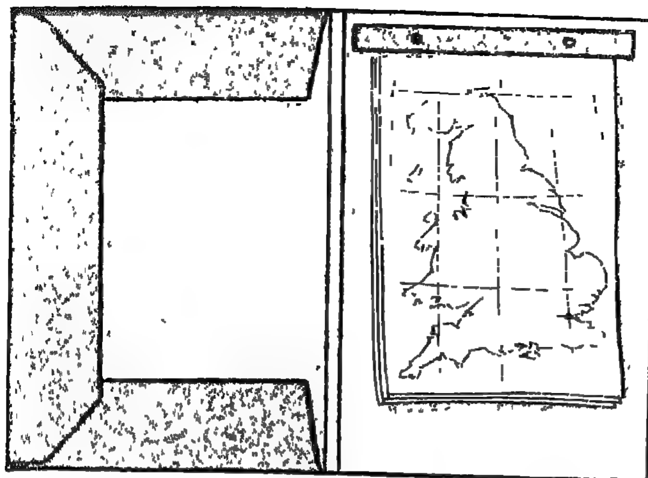
Most teachers must have felt the need for some kind of receptacle to hold the various notes, diagrams, maps, etc., that have been made by the children throughout their course, and the modern tendency of teaching is to increase, rather than reduce, these aids.

The last exercise in this series gives a suggestion by which the children in their handwork period can utilise their knowledge of the beginnings of bookcraft to produce a useful holdall.

Reference to Fig 1 A will show the general layout of the case It consists of two rectangles of stout card, about 8 in. by 6 in., probably to be had from old boxes, joined together by a flap—which may be of stout pastel or brown paper, or of book-binders' cloth. The flap is a long strip and is pasted and placed flat on the desk. The two cards are fitted upon it, about ¼ in being left between them, and the extending flap portion is bent over and pressed down, Fig. 1 C. Next, the two boards are covered with light wallpaper or drawing paper covered with rainbow tints of pale water colour—made by adding the primary tints to damp paper and allowing them to intermix freely To the inside of the left cover three folding flaps of dark paper are stuck Their development is seen in Fig 1 B Within these flaps it is proposed that loose sheets containing graphical records, answers to tests, records of simple research work, etc., shall be kept. The right-hand portion of the case now demands consideration Near the top edge two holes are punched. One of the inexpensive hand punches of fixed gauge can be used for this purpose. Next, a strip of card about ½ in. wide is cut and punched with holes to correspond. Two paper fasteners are stuck through the holes and bent back This side of the case is to hold the various sketch maps and diagrams used in the course Each sheet will require punching before fixing.

Finally, the cover of the holdall is given an appropriate design. In Fig. 1 D appears a copy of the British Lion ready for tracing. This will be effective if cut out in black paper. Beneath the figure an appropriate quotation is printed in Indian ink A shield with bars of red, white and blue may be stuck beneath the quotation The completed front of the cover is seen in Fig 1 E.

Fig 1A



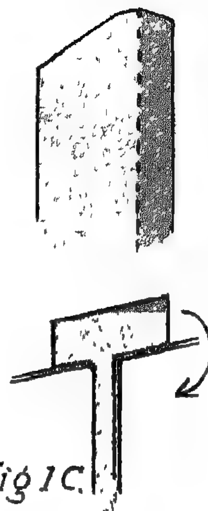






Fig 1E.

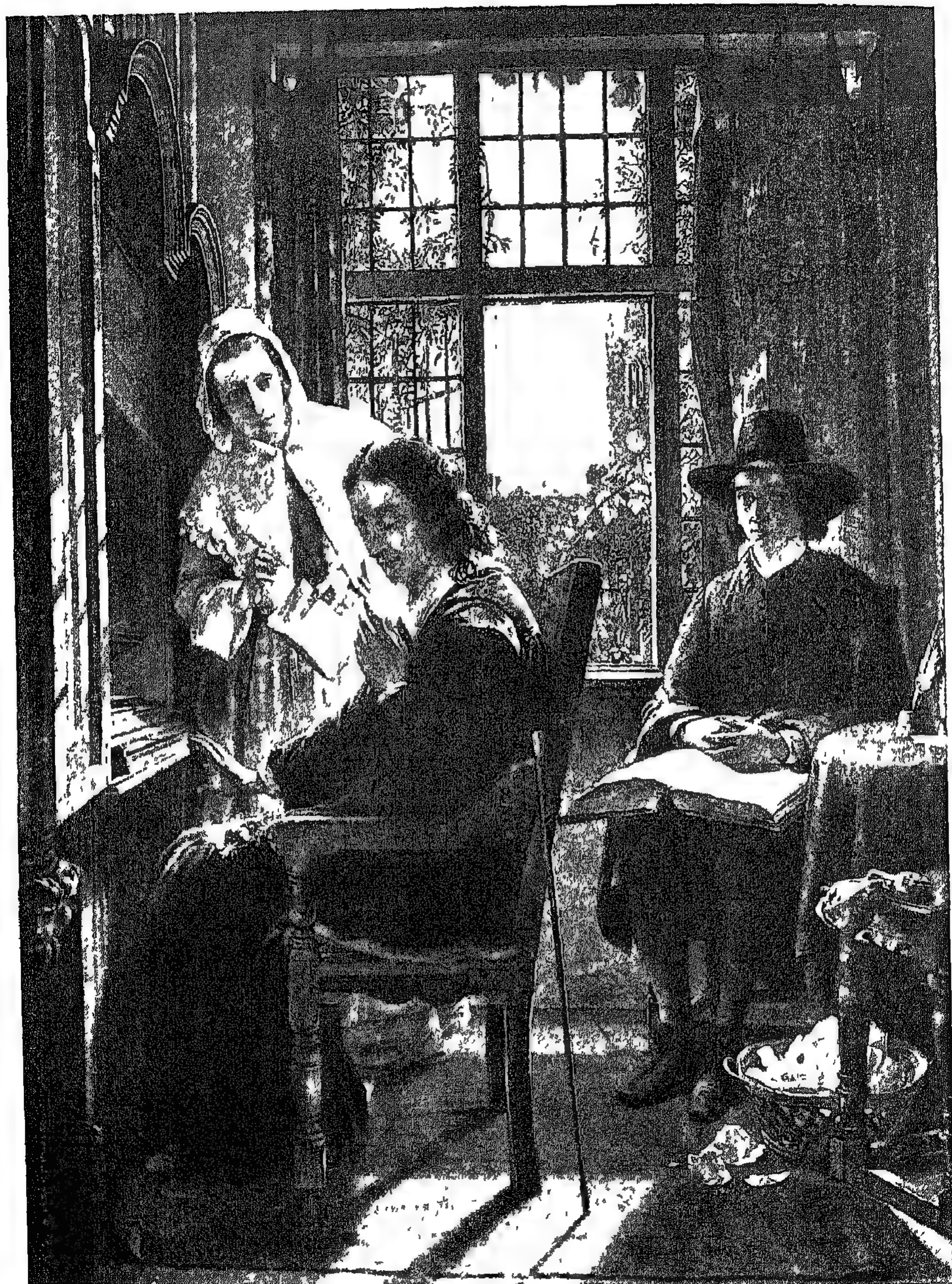
PLATE X

A Holdall in Stout Card and Paper

FOURTH YEAR'S COURSE

OF

ENGLISH



From the picture by J C Horsley, R A] [*Photograph Rischgitz*

MILTON DICTATING "SAMSON AGONISTES"

MODEL LESSONS FOR THE TEACHING OF LITERATURE

Scope of the Work.—The two Model Lessons which are included in this section are intended as a guide to the study of prose in the classroom The Lessons are in the form of stories, with accompanying exercises, both oral and written, which are designed to bring out the full value of the text, and bear directly upon it The exercises are based on the principles laid down in the General Introduction on the "Teaching of English in the Primary School" which is given in Volume I, page 131, of this work They are framed to provide for language-study through the direct medium of the story. unfamiliar words and phrases which occur in the text are brought up for discussion, word-study, memory work, tests of reading and exercises for composition are supplied. In addition, the intensive study of a chosen passage has been developed. It is based on the article "Language-Study" in the *Handbook of Suggestions for Teachers* issued by the Board, now Ministry, of Education. The reader is advised to refer to the General Introduction mentioned above, fully to appreciate the use and object of these Model Lessons.



THE PURPLE JAR

ROSAMOND, a little girl about seven years old, was walking with her mother in the streets of London. As she passed along she looked in at the windows of several shops, and saw a great variety of different sorts of things, of which she did not know the use, or even the names. She wished to stop to look at them, but there was a great number of people in the streets, and a great many carts, carriages, and wheelbarrows, and she was afraid to let go her mother's hand.

"Oh, mother, how happy I should be," she said, as she passed a toy shop, "if I had all these pretty things!"

"What, all! Do you wish for them all, Rosamond?"

"Yes, mamma, all"

As she spoke they came to a milliner's shop, the windows of which were decorated with ribbons and lace, and festoons of artificial flowers

"Oh, mamma, what beautiful roses! Won't you buy some of them?"

"No, my dear."

"Why?"

"Because I don't want them, my dear"

They went a little farther, and came to another shop, which caught Rosamond's eye It was a jeweller's shop, and in it were a great many pretty baubles, ranged in drawers behind glass.

"Mamma, will you buy some of these?"

"Which of them, Rosamond?"

"Which? I don't know which, any of them will do, for they are all pretty."

"Yes, they are all pretty, but of what use would they be to me?"

"Use! Oh, I am sure you could find some use or other for them if you would only buy them first."

"But I would rather find out the use first"

"Well, then, mamma, there are buckles, you know that buckles are useful things, very useful things"

"I have a pair of buckles, I don't want another pair," said her mother, and walked on.

Rosamond was very sorry that her mother wanted nothing. Presently, however, they came to a shop, which appeared to her far more beautiful than the rest. It was a chemist's shop, but she did not know that.

"Oh, mother, oh!" cried she, pulling her mother's hand, "look, look! blue, green, red, yellow, and purple! Oh, mamma, what beautiful things! Won't you buy some of these?"

Still her mother answered as before, "Of what use would they be to me, Rosamond?"

"You might put flowers in them, mamma, and they would look so pretty on the chimney piece I wish I had one of them"

"You have a flowerpot," said her mother, "and that is not a flowerpot."

"But I could use it for a flowerpot, mamma, you know"

"Perhaps if you were to see it nearer, if you were to examine it, you might be disappointed"

"No, indeed, I'm sure I should not; I should like it exceedingly"

Rosamond kept her head turned to look at the purple vase, till she could see it no longer

"Then, mother," said she, after a pause, "perhaps you have no money."

"Yes, I have"

"Dear me, if I had money I would buy roses, and boxes, and buckles, and purple flowerpots, and everything." Rosamond was obliged to pause in the midst of her speech

"Oh, mamma, would you stop a minute for me? I have got a stone in my shoe, it hurts me very much"

"How came there to be a stone in your shoe?"

"Because of this great hole, mamma,—it comes in there, my shoes are quite worn out. I wish you would be so very good as to give me another pair"

"Nay, Rosamond, but I have not money enough to buy shoes, and flowerpots, and buckles, and boxes, and everything."

Rosamond thought that was a great pity. But now her foot, which had been hurt by the stone, began to give her so much pain that she was obliged to hop every other step, and she could think of nothing else. They came to a shoemaker's shop soon afterwards

"There, there! mamma, there are shoes, there are little shoes that would just fit me, and you know shoes would be really of use to me."

"Yes, so they would, Rosamond. Come in"

She followed her mother into the shop

Mr Sole, the shoemaker, had a great

many customers, and this shop was full, so they were obliged to wait

"Well, Rosamond," said her mother, "you don't think this shop so pretty as the rest?"

"No, not nearly, it is black and dark, and there are nothing but shoes all round, and, besides, there's a very disagreeable smell"

"That smell is the smell of new leather"

"Is it? Oh!" said Rosamond, looking round, "there is a pair of little shoes, they'll just fit me, I'm sure"

"Perhaps they might, but you cannot be sure till you have tried them on, any more than you can be quite sure that you should like the purple vase exceedingly, till you have examined it more attentively"

"Why, I don't know about the shoes, certainly, till I have tried; but, mamma, I am quite sure that I should like the flowerpot."

"Well, which would you rather have, a jar or a pair of shoes? I will buy either for you."

"Dear mamma, thank you—but if you could buy both?"

"No, not both."

"Then the jar, if you please"

"But I should tell you, that in that case I shall not give you another pair of shoes this month."

"This month! that's a very long time, indeed! You can't think how these hurt me, I believe I'd better have the new shoes. Yet, the purple flowerpot! Oh, indeed, mamma, these shoes are not so very, very bad! I think I might wear them a little longer, and the month will soon be over I can make them last till the end of the month, can't I? Don't you think so, mamma?"

"Nay, my dear, I want you to think for yourself; you will have time enough to consider the matter, whilst I speak to Mr. Sole about my boots."

Mr. Sole was by this time at leisure, and whilst her mother was speaking to him, Rosamond stood in profound meditation, with one shoe on, and the other in her hand

"Well, my dear, have you decided?"

"Mamma!—yes,—I believe I have. If you please, I should like to have the flowerpot, that is, if you won't think me very silly, mamma"

"Why, as to that, I can't promise you, Rosamond, but when you have to judge for yourself you should choose what would make you happy, and then it would not signify who thought you silly"

"Then, mamma, if that's all, I'm sure the flowerpot would make me happy," said she, putting on her old shoe again, "so I choose the flowerpot."

"Very well, you shall have it, clasp your shoe and come home."

Rosamond clasped her shoe and ran after her mother. It was not long before the shoe came down at the heel, and many times she was obliged to stop to take the stones out of it, and she often limped with pain, but still the thoughts of the purple flowerpot prevailed, and she persisted in her choice.

When they came to the shop with the large window, Rosamond felt much pleasure upon hearing her mother desire the servant, who was with them, to buy the purple jar, and bring it home. He had other commissions, so he did not return with them Rosamond, as soon as she got in, ran to gather all her own flowers, which she kept in a corner of her mother's garden.

"I am afraid they'll be dead before the flowerpot comes, Rosamond," said her mother to her, as she came in with the flowers in her lap.

"No, indeed, mamma, it will come home very soon, I dare say. I shall be very happy putting them into the purple flowerpot."

"I hope so, my dear"

The servant was much longer returning home than Rosamond had expected, but at length he came, and brought with him the long-wished-for jar. The moment it was set down upon the table, Rosamond ran up to it with an exclamation of joy: "I may have it now, mamma?"

"Yes, my dear, it is yours."

Rosamond poured the flowers from her lap upon the carpet, and seized the purple flowerpot

"Oh, dear, mother!" cried she, as soon as she had taken off the top, "but there's something dark in it which smells very disagreeably. What is it? I didn't want this black stuff."

"Nor I, my dear."

"But what shall I do with it, mamma?"

"That I cannot tell."

"It will be of no use to me, mamma."

"That I cannot help."

"But I must pour it out, and fill the flowerpot with water."

"As you please, my dear"

"Will you lend me a bowl to pour it into, mamma?"

"That was more than I promised you, my dear; but I will lend you a bowl"

The bowl was produced, and Rosamond proceeded to empty the purple vase. But she experienced much surprise and disappointment, on finding, when it was entirely empty, that it was no longer a purple vase. It was a plain white glass jar, which had appeared to have that beautiful colour merely from the liquor with which it had been filled

Little Rosamond burst into tears.

"Why should you cry, my dear?" said her mother: "it will be of as much use to you now as ever, for a flowerpot"

"But it won't look so pretty on the chimney piece I am sure, if I had known that it was not really purple, I should not have wished to have it so much."

"But didn't I tell you that you had not examined it, and that perhaps you would be disappointed?"

"And so I am disappointed, indeed. I wish I had believed you at once. Now I had much rather have the shoes, for I shall not be able to walk all this month; even walking home that little way hurt me exceedingly. Mamma, I will give you the flowerpot back again, and that purple stuff and all, if you'll only give me the shoes"

"No, Rosamond, you must abide by your own choice, and now the best thing you can possibly do is to bear your disappointment with good humour."

"I will bear it as well as I can," said Rosamond, wiping her eyes; and she began slowly and sorrowfully to fill the vase with flowers

But Rosamond's disappointment did not end here Many were the difficulties and distresses into which her imprudent choice brought her, before the end of the month

Every day her shoes grew worse and worse, till at last she could neither run, dance, jump, nor walk in them.

Whenever Rosamond was called to see anything, she was detained pulling her shoes up at the heels, and was sure to be too late

Whenever her mother was going out to walk, she could not take Rosamond with her, for Rosamond had no soles to her shoes; and at length, on the very last day of the month, it happened that her father proposed to take her with her brother to a glasshouse, which she had long wished to see. She was very happy, but, when she was quite ready, had her hat and gloves on, and was making haste downstairs to her brother and father, who were waiting for her at the hall door, the shoe dropped off. She put it on again in a great hurry, but, as she was going across the hall, her father turned round

"Why are you walking slipshod? No one must walk slipshod with me. Why, Rosamond," said he, looking at her shoes with disgust, "I thought that you were always neat, go, I cannot take you with me."

Rosamond coloured and retired.

"Oh, mamma," said she, as she took off her hat, "how I wish that I had chosen the shoes! They would have been of so much more use to me than that jar however, I am sure, no, not quite sure, but I hope I shall be wiser another time."

FROM THE STORY

1. **Find the passages which show**—(*a*) that the streets were crowded when Rosamond went out, (*b*) that there are many different

kinds of shops with pretty things in them in London; (c) that Rosamond's mother was not poor; (d) how chemists colour their jars; (e) that Rosamond did not wear laced shoes.

2. Tell me.—Why did Rosamond wish to stop as she went along the streets? What did Rosamond see in the chemist's shop? How did Rosamond come to have a stone in her shoe? What choice was Rosamond given? What did Rosamond choose to have? Who brought home the purple jar? Why did Rosamond ask her mother for a bowl? Why did Rosamond cry? Why was Rosamond not able to go out with her father? What should you do before you buy anything?

3. Write with the lifted comma—(a) the hand of her mother, (b) the shop of a milliner, (c) the eye of Rosamond, (d) the shop of a jeweller, (e) the shop of a shoemaker, (f) the disappointment of Rosamond. *Example*—(a) the hand of her mother, her mother's hand

4. Write without the lifted comma—won't; don't; I'm, I'd; can't, that's, they'll, there's

5. Fill in the commas.—(A comma marks the pause when you are reading aloud)—Every day her shoes grew worse and worse till at last she could neither run dance jump nor walk in them.

She was very happy, but when she was quite ready had her hat and gloves on and was making haste downstairs to her brother and father who were waiting for her at the hall door the shoe dropped off.

"However I am sure no not quite sure but I hope I shall be wiser another time."

5. Marked passage.—Read the passage on page 186 and then think about it with the help of these questions —

Rosamond kept her head turned to look at the purple vase, till she could see it no longer.

Does *turned her head* mean the same thing as *kept her head turned*? Explain the difference in meaning between *turned her head* and *kept her head turned* Why did Rosamond have to keep her head turned to see the jar? How was it that at last *she could see it no longer*? What two other words are used to mean *Rosamond*? What two words are used to mean the *jar*?

"Then, mother," said she, after a pause, "perhaps you have no money"

Why are the lifted commas " " used? Who is meant by *she*? What do you think Rosamond was doing during the pause? Who is meant by *you*? Why did Rosamond think that perhaps her mother had no money?

"Yes, I have"

Who is speaking? Finish the sentence, telling exactly what is understood

"Dear me, if I had money I would buy roses, and boxes, and buckles, and purple flowerpots, and everything"

Who is meant by *I*? Name the shops where Rosamond had seen each of the things she speaks of. Why did Rosamond's mother not want to buy everything?

Rosamond was obliged to pause in the midst of her speech

Find other words which mean *obliged*, *midst*, *speech*.

"Oh, mamma, would you stop a minute for me? I have got a stone in my shoe, it hurts me very much"

What word is used to mean *Rosamond's mother*? Why is the mark ? used? Why do you think Rosamond wanted her mother to stop? Find another word for *minute* What is meant by *it*? Say in different words *it hurts me very much*

6. Sentence making.—Make two sentences telling the two reasons why Rosamond regretted her choice Make a sentence telling how Rosamond bore her disappointment Tell the story of *The Purple Jar* as Rosamond's mother would tell it to her friend.

(There is a blackboard sketch of Rosamond's jar on page 193.)



THE WIND IN THE PINE TREE

A Fairy Tale from Japan

IT was a Deity from High Heaven that planted the Pine Tree.

So long ago that the crane cannot remember it, and the tortoise knows it only by hearsay from his great-grandmother, the heavenly deity descended. Lightly, lightly he came by way of the Floating Bridge, bearing the tree in his right hand Lightly, lightly his feet touched the earth

He said, "I have come to the Land of the Reed Plains I have come to the Land of Fresh Rice Ears It is a good land, I am satisfied." And he planted the Pine Tree within the sound of the sea at Takasaga, which is in the Province of Harima. Then he went up again to High Heaven by way of the Floating Bridge.

But the Pine Tree flourished. So great it grew, there was not a greater in all the Land of the Reed Plains. Its trunk was rosy red, and beneath it spread a brown carpet of fallen needles.

In the sweet nights of summer the Children of the Woods came hand in hand to the Pine Tree by moonlight, slipping their slim dark feet upon the moss, and tossing back their long green hair.

The Children of the Water came by moonlight, all drenching wet their sleeves, and the bright drops fell from their finger-tips. The Children of the Air rested in the Pine Tree's branches, and made murmuring music all the live-long night The Children of the Sea Foam crept up the yellow sands; and from the confines of Yomi came the Mysteries, the Sounds and the Scents of the Dark—with faces veiled and thin grey forms, they came, and they hung upon the air about the place where the Pine Tree was, so that the place was holy and haunted

Lovers wandering upon the beach at Takasaga would hear the great company of Spirits singing together.

"Joy of my heart," they said to one another, "do you hear the wind in the Pine Tree?"

Poor souls lying sick a-bed would listen, and fishermen far out at sea would pause

in their labour to whisper, "The wind, the wind in the Pine Tree! How the sound carries over the water!"

As for the coming of the Maiden, the crane cannot remember it, but the tortoise has it of his great-grandmother that she was born of poor parents in Takasaga The Maiden was brown and tall and slender; in face and form most lovely Her hair hung down to her knees She rose at dawn to help her mother, she found sticks for the fire, she drew water at the well. She could spin and weave with the best, and for long, long hours she sat and plied her wheel or her shuttle in the shade of the great Pine Tree, whilst her ears heard the sound of the wind in its branches Sometimes her eyes looked out over the paths of the sea, as one who waits and watches. She was calm, not restless, more grave than gay, though she smiled not seldom Her voice was the voice of a Heavenly Being

Now concerning the Youth from the far province, of him the crane knows something, for the crane is a great traveller She was flying over the streams and the valleys of the far province, so she says, when she saw the Youth at work in the green rice fields. The crane lingered, circling slowly in the bright air The Youth stood up. He looked round upon the valleys and streams; he looked into the sky.

"I hear the call," he said. "I may tarry no longer Voice in my heart I hear and I obey."

With that he left the rice field, and bade farewell to his mother and his father and his sisters and his brothers and his friends. All together, they came down to the seashore, weeping and clinging to each other. The Youth took a boat and went away to sea, and the rest of them stood upon the beach

On sped the boat for many a day over the unknown paths of the sea. And the white crane flew behind the boat. And when the wind failed, she pushed the boat forward with the wind of her strong wings

At last, one evening about the hour of sunset, the Youth heard the sound of sweet singing The sound came to him from the land, and it travelled over the paths of the sea He stood up in his boat, and the crane beat her strong white wings and guided his boat to the shore till its keel touched the yellow sand of the sea beach of Takasaga

When the Youth had come ashore he pushed the boat out again with the waves, and watched it drift away. Then he turned his face inland. The sound of music was still in his ears The voice was like the voice of a Heavenly Being, and strange and mystical were the words of the song:—

"The lover brought a love gift to his mistress,
Jewels of jade upon a silken string;
Well-carved jewels,
Well-rounded jewels,
Green as the grass,
Upon a silken string
The jewels knew not one another,
The string they know,
Oh, the strength of the silken string!"

The Youth went inland and came to the great Pine Tree and to the Maid that sat beneath, weaving diligently and singing. The crane came flying with her strong white wings, and perched upon the Tree's topmost branches The tortoise lay below on the brown carpet of needles. He watched and saw much with his little eyes, but he said nothing, being very silent by nature

The Youth stood before the Maiden, waiting.

"Whence come you?" she said, lifting up her eyes.

"I have come across the sea path I have come from afar"

"And wherefore came you?"

"That you must know best, seeing it was your voice that sang in my heart."

"Do you bring me the gift?" she said.

"Indeed, I bring you the complete gift, jewels of jade upon a silken string"

"Come," she said, and rose and took him

by the hand And they went to her father's house.

So they drank the "Three Times Three," and were made man and wife, and lived in sweet tranquillity many, many years.

All the time the crane dwelt in the Pine Tree's topmost branches, and the tortoise on the brown carpet of needles below.

At last the Youth and Maiden, that once were, became white-haired, old, and withered, by the swift relentless passage of years

"Fair love," said the old man, "how weary I grow! It is sad to be old"

"Say not so, dear delight of my heart," said the old woman; "say not so, the best of all is to come"

"My dear," said the old man, "I have a desire to see the great Pine Tree before I die, and to listen once more to the song of the wind in its branches."

"Come, then," she said, and rose and took him by the hand

Old and faint and worn, with feeble, tottering steps, and hand in hand they came.

"How faint I grow!" said the old man "Ah, I am afraid! How dark it is! Hold you my hand . . ."

"I have it fast in mine. There, lie down, lie down, dear love; be still and listen to the wind in the Pine Tree"

He lay on the soft brown bed beneath the Pine Tree's boughs; and the wind sang

She who was his love and his wife bent over him and sheltered him And he suffered the great change.

Then he opened his eyes and looked at her She was tall and straight and slender, in face and form most lovely, and each of them was young as the gods are young He put out his hand and touched her. "Your long black hair . . ." he said.

Once more she bade him, "Come" Lightly they left the ground. To the sound of the wind's music they swayed, they floated, they rose into the air. Higher they rose and higher. The branches of the Pine Tree received them, and they were no more seen.

Still, in the sweet nights of summer, the Children of the Woods come hand in hand to the Pine Tree by moonlight, slipping their slim dark feet upon the moss, and tossing back their long green hair.

The Children of the Water come by moonlight, all drenching wet their sleeves, and the bright drops fall from their finger-tips The Children of the Air rest in the Pine Tree's branches, and make murmuring music through the live-long night. The Children of the Sea Foam creep up the yellow sands, and from the confines of Yomi come the Mysteries, the Sounds and the Scents of the Dark—with faces veiled and thin grey forms they come, and they hang upon the air about the place where the Pine Tree is, so that the place is holy and haunted.

Lovers wandering upon the beach at Takasaga hear the great company of Spirits singing together

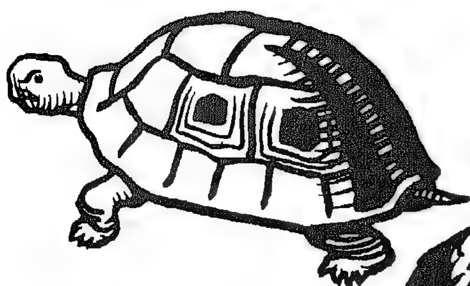
"Joy of my heart," they say to one another, "do you hear the wind in the Pine Tree?"

FROM THE STORY

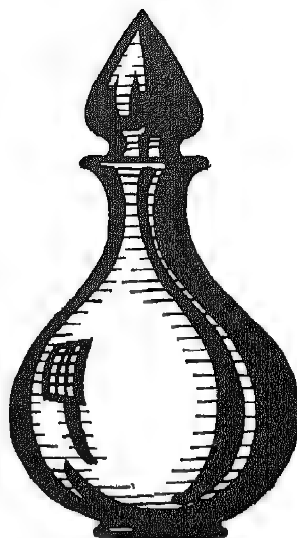
1. Do you know?—What is another name for a deity? Describe a crane How many years does the tortoise live? What is another name for the *Floating Bridge*? What is the usual name for the *Land of the Reed Plains*? In what places do reeds grow? In what countries does rice grow? What do the leaves of the pine tree resemble? How used women to spin thread? How used women to weave thread?

2. Tell me.—Who planted the Pine Tree? Who comes to visit the Pine Tree? What people listen to the wind in the Pine Tree? Describe the Maiden Where did the crane meet the Youth? Why did the Youth leave his province? How did he come to the Maiden? What gift did he bring her? How do the people of Japan celebrate marriage? How did the old man and woman become young again? Where did they make their last home?

SKETCHES FOR THE BLACKBOARD













TORTOISE—SEE PAGE 190
PINE TREE—SEE PAGE 190

CRANE—SEE PAGE 191
JAPANESE WOMAN—SEE PAGE 191

PURPLE JAR—SEE PAGE 186
JAPANESE MAN—SEE PAGE 186

3. Marked passage.—Read the passage on page 192 and then think about it with the help of these questions —

Still, in the sweet nights of summer, the Children of the Woods come hand in hand to the Pine Tree by moonlight, slipping their slim dark feet upon the moss, and tossing back their long green hair.

Think of another way of saying *Still* What is the meaning of *still* in this sentence?—The surface of the lake was still. Which of these words describe *nights of summer*?—tranquil, dreary; balmy, boisterous, perfumed Why do the words *Children* and *Woods* begin with capital letters? (Small words like *of* and *the*, when they form part of a proper name, do not need capital letters.) Why is the present tense *come* used instead of the past tense *came*? Say *by moonlight* in other words. Read aloud, emphasising the letter *s* *slipping their slim dark feet upon the moss* What sound do you think this repetition is meant to convey? Which words describe their *feet*? Why do you think their hair was *long* and *green*? Picture to yourself the Children of the Woods and describe them in your own words Where do you think they would live?

The Children of the Water come by moonlight, all drenching wet their sleeves, and the bright drops fall from their finger-tips.

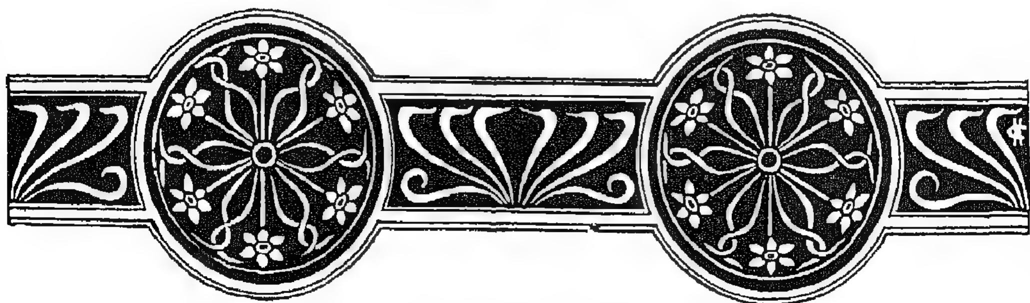
What shape are the sleeves of the Japanese? Why should their sleeves be *drenching wet*? What *bright drops* are meant? Picture to yourself the Children of the Water and describe them in your own words

The Children of the Air rest in the Pine Tree branches, and make murmuring music through the live-long night

Write an imaginary description of the Children of the Air. Say aloud, emphasising the letter *m*: *make murmuring music* What sound do you think this repetition is meant to convey? When does the wind make a sound that is *musical*? When does the wind make a sound that is not musical? Say more simply: *through the live-long night*

4. Sentence making.—Tell the story of how the Pine Tree was planted. Tell all you know about the full-grown Pine Tree Tell how the Maiden spent her time. Tell how the Youth left his own country and went to visit the Maiden

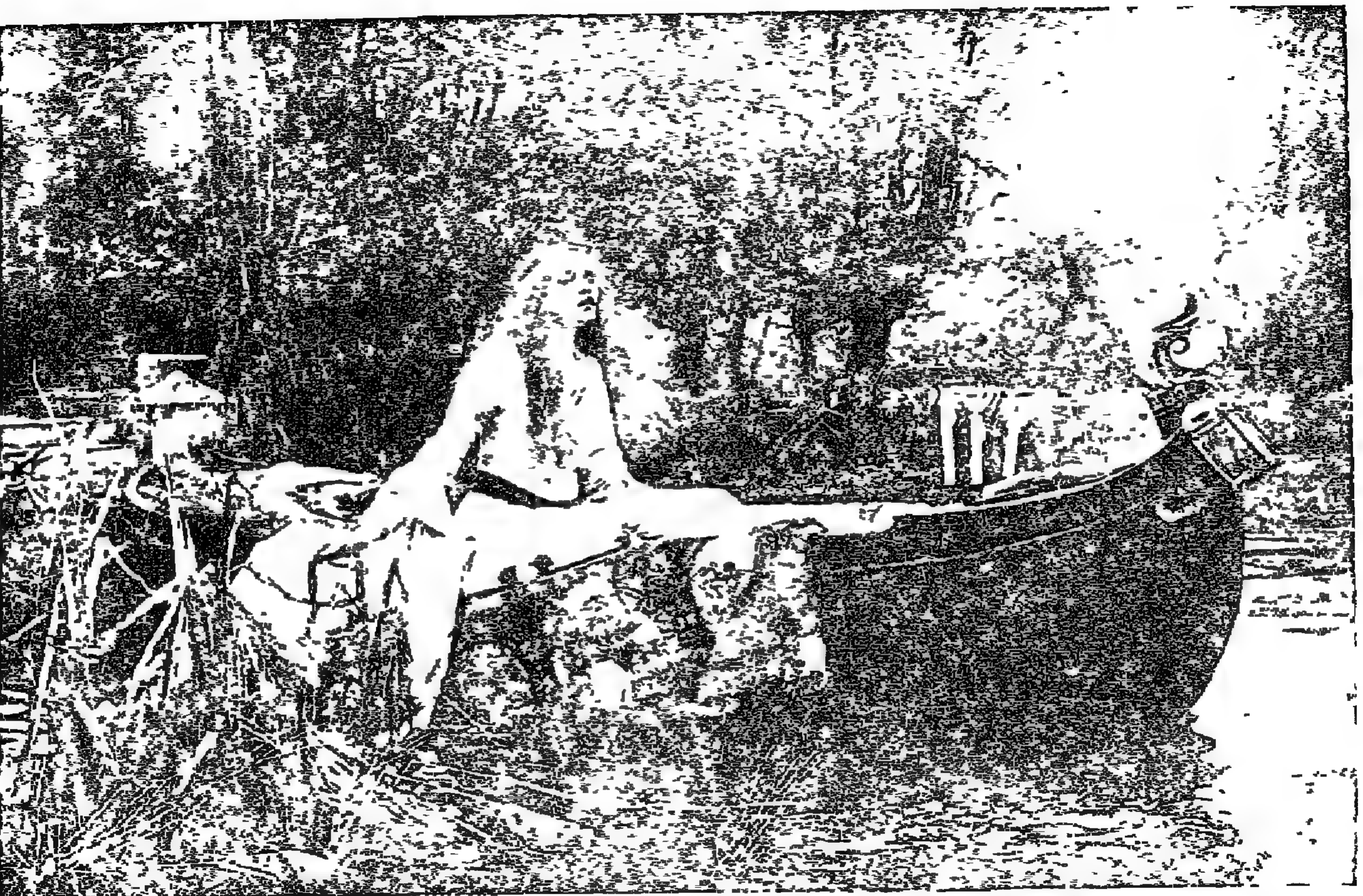
(There are blackboard sketches of a pine tree, tortoise, crane and Japanese man and woman on page 193)



FOURTH YEAR'S COURSE

OF

POETRY



From the picture by J H Waterhouse]

[*By permission of the Tate Gallery.*

THE LADY OF SHALOTT

(Class Picture No 155 in the portfolio)

POEMS FOR THE FOURTH YEAR'S COURSE

THE WIND

"He it was whose hand in Autumn
Painted all the trees with scarlet,
Stained the leaves with red and yellow,
He it was who sent the snow-flakes,
Sifting, hissing through the forest,
Froze the ponds, the lakes, the rivers,
Drove the loon and sea-gull southward,
Drove the cormorant and curlew
To their nests of sedge and sea-tang
In the realms of Shawondasee"

Longfellow.

The wind has a music of its own. Sometimes, when the wind blows softly and rustles the leaves of the trees, its music is quiet and soothing; but sometimes, when it blows with a deafening roar, and bends the strongest branches, its music is like that of the surging sea. There is an everlasting mystery about the wind: "The wind bloweth where it listeth, and thou hearest the sound thereof, but canst not tell whence it cometh, and whither it goeth" The mystery, the power and the music of the wind have attracted many poets to write about it The extract at the head of this section is taken from the story of the four winds in Longfellow's *Song of Hiawatha* (There are blackboard sketches of a curlew and a cormorant on page 205.)

1 THE NIGHT WIND

Have you ever heard the wind go "Yoöooo"?
'Tis a pitiful sound to hear!
It seems to chill you through and through
With a strange and speechless fear.
'Tis the voice of the night that broods outside
When folk should be asleep,
And many and many's the time I've cried
To the darkness brooding far and wide
Over the land and the deep
"Whom do you want, O lonely night,
That you wail the long hours through?"
And the night would say in its ghostly way·

"Yoooooooo!
Yoooooooo!
Yoooooooo!"

My mother told me long ago
(When I was a little lad)
That when the night went wailing so,
Somebody had been bad,
And then, when I was snug in bed,
Whither I had been sent,
With the blankets pulled up round my head,
I'd think of what my mother'd said,
And wonder what boy she meant!
And "Who's been bad to-day?" I'd ask
Of the wind that hoarsely blew,
And the voice would say in its meaningful way:

"Yoooooooo!
Yoooooooo!
Yoooooooo!"

That this was true I must allow—
You'll not believe it, though!
Yes, though I'm quite a model now,
I was not always so,
And if you doubt the things I say
Suppose you make the test;
Suppose, when you've been bad some day
And up to bed are sent away
From mother and the rest—
Suppose you ask, "Who has been bad?"

And then you'll hear what's true;
For the wind will moan in its ruefullest tone:
"Yoooooooo!
Yoooooooo!
Yoooooooo!"

Eugene Field



Note.—In this poem, Eugene Field, the American children's poet, tells of the weird sound sometimes made by the wind at night. When he was a little boy, he says, the dark night seemed to be a lonely, mysterious person hovering outside the window panes, and the wind was "the voice of the night." It was a strange, plaintive voice, and he cried out to it—

"'Whom do you want, O lonely night,
That you wail the long hours through?'
And the night would say in its ghostly way:
'Yoooooooo!'"

His mother told him that the night wind moaned when "somebody had been bad." When he had been sent to bed for naughtiness he heard the wind crying again and thought of his mother's words. He pulled the blankets up round his head and asked the wind who had been bad that day. The hoarse wind answered meaningly, "Yoooooooo!"

The poet asks all children who do not believe him to find out the truth for themselves. When some day they have been naughty and are sent up to bed—"Away from mother and the rest"—they too must say to the wind, "'Who has been bad?'"

"And then you'll hear what's true,
For the wind will moan in its ruefullest tone
'Yoooooooo!'"

When taking this poem with the class it is a good plan to begin by telling the story of the poem in the way suggested in the note. The story will excite interest and help to create the right atmosphere. The teacher should then read the poem aloud with sympathy and expression. A discussion of the poem with the class will follow. Let the pupils repeat words which suggest the weird music of the night wind—"yoooooooo," "ghostly," "hoarsely," "ruefullest," "wail," "moan." Why does the poem amuse us? What moral is implied in it? The poet conveys a sense of creepiness by such phrases as "pitiful sound," "chill you through and through," "strange and speechless fear" The word "yoooooooo" should be long drawn out, gradually rising and then falling, sounding "ghostly" in the first stanza, "hoarsely" in the second and "ruefully," or sorrowfully, in the third.

Make a list of all the words and phrases which suggest the creepiness of the night. Now write down those which have the sound of the night wind in them What does the child think that the night wind is? What did his mother tell him? Why had he been sent to bed? What questions did he ask? How can you prove the truth of the poet's words? Work out the rhyme scheme of the poem. Write down three lines which have middle rhymes Why do you like this poem? Tell a story of your own about the night wind.

2. The West Wind

It's a warm wind, the west wind, full of birds' cries;
I never hear the west wind but tears are in my eyes
For it comes from the west lands, the old brown hills,
And April's in the west wind, and daffodils.

It's a fine land, the west land, for hearts as tired as mine,
Apple orchards blossom there, and the air's like wine.

There is cool green grass there, where men may lie at rest,
And the thrushes are in song there, fluting from the nest.

"Will ye not come home, brother? ye have been long away,
It's April, and blossom time, and white is the may,
And bright is the sun, brother, and warm is the rain,—
Will ye not come home, brother, home to us again?

"The young corn is green, brother, where the rabbits run,
It's blue sky, and white clouds, and warm rain and sun.
It's song to a man's soul, brother, fire to a man's brain,
To hear the wild bees and see the merry spring again.

"Larks are singing in the west, brother, above the green wheat,
So will ye not come home, brother, and rest your tired feet!
I've a balm for bruised hearts, brother, sleep for aching eyes,"
Says the warm wind, the west wind, full of birds' cries.

It's the white road westwards is the road I must tread
To the green grass, the cool grass, and rest for heart and head,
To the violets and the warm hearts and the thrushes' song,
In the fine land, the west land, the land where I belong

John Masefield



JOHN MASEFIELD [*Central Press*

Note —This poem sings of the longing for home which the music of the west wind excites in the heart of a wanderer. It tells of the beauties of nature in the warm west lands of England We are given glimpses of "the old brown hills," the flowers, the apple orchards, the cool green grass and the birds. The poem has a swinging rhythm, and in many of its words is the murmur of a softly blowing wind. Let the pupils say the word "wind" several times, dwelling on the "w" and the "n," and they will then realise how beautifully the sound of the wind is suggested in the name by which it is called This sound the poet intensifies by repetition and alliteration—

" It's a *w*arm *w*ind, the *w*est *w*ind, full of birds' cries;
I never hear the *w*est *w*ind, but tears are in my eyes."

To the poet's tired heart the natural beauties of the west land offer repose, and this sense of restfulness is the keynote of the poem. The gentle swing of the rhythm, the humming words and the thoughts suggested are all restful—

" There is cool green grass there, where men may lie at rest,
And the thrushes are in song there, fluting from the nest —
' So will ye not come home, brother, and rest your tired feet!
I've a balm for bruised hearts, brother, sleep for aching eyes,'
Says the warm wind, the west wind, full of birds' cries."

In part of the poem the wind speaks as a person, calling the exile his "brother" and whispering in his ear of the delights of the west land.

" It's April, and blossom time, and white is the may . . . .
The young corn is green, brother, where the rabbits run . . . .
Larks are singing in the west . . . ."

The children should look in other poems for examples of personification.

Notice the touches of colour which beautify the descriptions—brown hills and daffodils, blue sky and white clouds, green wheat and white may, cool green grass and violets. In the recitation of the poem the pupils should try to keep the rhythm running smoothly, and dwell upon the musical words Mr John Masefield has been Poet Laureate of England since 1930.

Find all the examples of repetition in the poem. What are some of the beauties of the west land? Make a list of musical words and phrases from this poem Find a simile in the second stanza, and write it down What does the rhythm of the poem suggest? Write out lines which sound quiet and soothing. Describe the season of which the west wind speaks Why does the sound of the west wind bring tears to the poet's eyes? What things does he love? Talk about the county to which you belong. (There are blackboard sketches of a lark and a rabbit on page 205.)

3. The Wind

Why does the wind so want to be
Here in my little room with me?
He's all the world to blow about,
But just because I keep him out
He cannot be a moment still,
But frets upon my window sill,
And sometimes brings a noisy rain
To help him batter at the pane

Upon my door he comes to knock.
He rattles, rattles at the lock
And lifts the latch and stirs the key—
Then waits a moment breathlessly,
And soon, more fiercely than before,
He shakes my little trembling door,
And though "Come in, Come in!" I say,
He neither comes nor goes away.

Barefoot across the chilly floor
I run and open wide the door;
He rushes in, and back again
He goes to batter door and pane,

Pleased to have blown my candle out.
He's all the world to blow about,
Why does he want so much to be
Here in my little room with me?

E. Rendall



Note—A perplexed child asks us a question in this poem—

"Why does the wind so want to be
Here in my little room with me?"

To this child the wind is a person—a worrying, fidgety being who cannot make up his mind what he wants. He has the whole world in which to move about, and yet he keeps trying to enter the child's little bedroom—

"Upon my door he comes to knock
He rattles, rattles at the lock
And lifts the latch and stirs the key"—

Strangely enough, however, when he is invited in he prefers to stay outside So the child lights a candle, patters barefooted over the cold floor, and opens the door to the restless visitor The wind rushes into the room and out again, extinguishing the light on his way, and immediately afterwards he begins battering at the door and window as before.

The poem is a favourite with children. It should be recited in a quiet perplexed tone, as if demanding an answer from the listeners The short lines suggest the hustling of the wind, and this is emphasised further by repetition and onomatopoetic words. He "frets" and "batters",

"He rattles, rattles at the lock—
And though 'Come in, Come in!' I say,
He neither comes nor goes away."

The word "frets" is used to illustrate the restlessness of the wind, and literally means "to eat away".

Have you ever heard the wind on a stormy night suddenly stop *breathlessly* (as if he were out of breath) and then blow harder than ever? If the wind should be blowing now, listen to him! Then, as you say the second stanza of the poem, imagine that you yourself are the wind.

What deeds are done by the wind in the poem? Whom does the wind sometimes get to help him? What do you think that the child is doing? What answer would you give to his question? Write down words from the poem which suggest the fury of the wind What does the wind do when he is invited into the room? What happens when the child opens the door? Write this line without shortening any of the words—"He's all the world to blow about" Why is it written as it is in the poem? How many *feet*, or strong beats, are there in each line? Make up a stanza about the rain; let it consist of four lines of the same length as those in the poem, and rhyming *a*, *a*, *b*, *b*.

4. The Wind

The wind's an old woman that rides on a broom.
"Doom! Doom!"
She sings as she rides
She'll tear down the cock from the steeple.
She'll harry
The birds in the branches, the leaves that still tarry
She'll set the mill spinning till, weary of sinning,
She turns from the land to the tides,
Rides
Over the land to the tides.

The wind's an old woman that hasn't a friend
"Rend! Rend!"
She cries as she goes
She'll drive the poor ships all astray from their haven.
She'll curse the poor seamen. She'll laugh at the craven.
She'll set the air freezing till, weary of teasing,
She turns from the sea to the floes,
Goes
Over the sea to the floes

The wind's an old woman who carries a whip.
"Rip ship!"
She cries to the moon.
And loud in the wake of the bergs that go straying
'Mid sounds of deep syrens and sea-horses neighing,
She'll lash on the water till weary of slaughter
She drops at the Pole in a swoon
Soon
Waked in the white of the moon

The wind's an old woman whose heart is a-freeze
"Seize! Seize!"
She cries to the frost.
She'll pen the poor ships and she'll stiffen the cables.
She'll stall the sea-horses in ice-carven stables,
Till, weary of spending her breath without ending,
She sinks in the snow and is lost,
Tost
Round like a leaf in the frost.

Wilfrid Thorley



Note.—This is an amusing and fanciful poem. The wind is described as a vengeful old woman who inflicts her will and power on land and sea The fancy recalls the old-time stories of witches who rode through the air on broomsticks, exercising their witchery and magic on all who crossed their paths and thwarted their wills. The poem has a galloping rhythm which races along to keep pace with the swift flight of the wind witch through the air. Notice that the kind of *foot*, or grouping of stressed and unstressed syllables, which lends itself to this rhythm consists of two weak syllables followed by a strong one—*ŏn ă broōm, iň ă swoōn*. This foot is called an *anapaest* The strong syllable in the anapaest is always well marked, hence lines made up chiefly of anapaests have a strong rhythm in them, such as is heard in the hoof beats of a galloping horse.

The rhyme scheme of the poem is an interesting one. There are end rhymes and middle rhymes, and a single rhyming word sometimes occupies a whole line The profusion of rhyming words facilitates the smooth running of the rhythm, and the varying lengths of the lines illustrate the capriciousness of the wind, blowing now gustily and then long and hard.

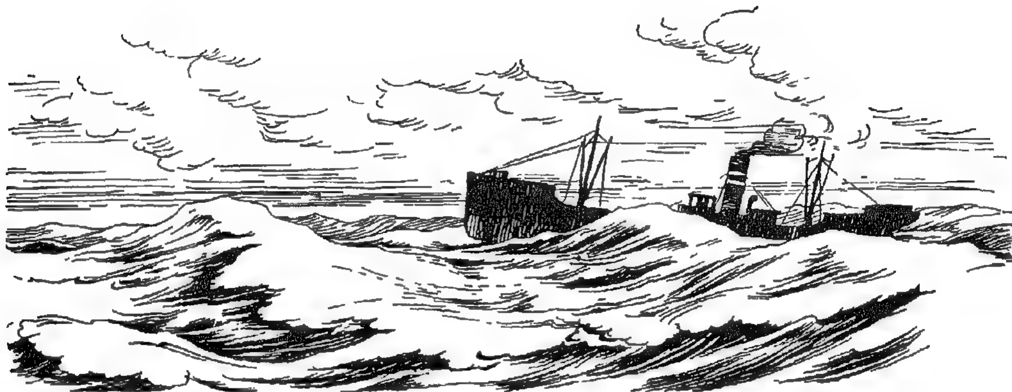
The poet gives us vivid pictures of the havoc wrought by the mischievous old woman of the wind. We see the broken weather vane on the church steeple, birds blown about helplessly, and flying leaves; ships are torn from their anchors and great billows roar and foam in the track of an iceberg. In the white moonlight upon the snowy wastes around the Pole the wind witch rages—

"Till, weary of spending her breath without ending,
She sinks in the snow and is lost."

The "floes" are floating sheets of ice, and the "icebergs" are literally "mountains" of ice. These floes and bergs drift southwards from the Pole and often prove dangerous to ships crossing the North

Atlantic. "In the wake of" means "behind" or "following." A "craven" is a coward; "syrens" are foghorns on ships; "sea-horses" are the "white horses" of the waves. The old woman of the wind freezes the waves that come in tossing the foam like white horses tossing their manes.

How is the wind described in this poem? Draw a picture of her. What kind of woman is she? Tell of the things that she does on land. What is a weathercock? Tell all you know about sea-horses. What does the wind do on the sea? Quote examples from this poem of both middle and end rhymes Of what does the rhythm remind you? Scan, or divide into strong and weak beats, the first line of each stanza. Tell about the pictures you see as you read the poem (There is a blackboard sketch of a witch on page 205)



THE SEA

" They that go down to the sea in ships,
And occupy their business in great waters;
These men see the works of the Lord,
And His wonders in the deep

For at His word the stormy wind ariseth,
Which lifteth up the waves thereof.

They are carried up to the heaven, and down again to the deep;
Their soul melteth away because of the trouble.

They reel to and fro, and stagger like a drunken man,
And are at their wits' end.

So when they cry unto the Lord in their trouble,
He delivereth them out of their distress.

For He maketh the storm to cease,
So that the waves thereof are still.

Then are they glad because they are at rest,
And so He bringeth them unto the haven where they would be."

Psalm CVII. 23-30.

The word "sea" recalls, at least to the city child, pleasant memories of happy holidays—memories of paddling and swim-

ming, sandy castles and rocky caves, golden beaches and blue-green waves, sailors and ships, shells and seaweed, and much more besides. Have you ever stretched yourself at full length on the warm sand and listened to the rhythm of the waves? Or have you put a shell to your ear and heard the murmur of the distant sea?

"And then I pressed the shell
Close to my ear
And listened well,
And straightway like a bell
Came low and clear
The slow, sad murmur of far distant seas"

If you have done these things you will the better understand why so many poets have written about the sea

It is likely that we in Britain love the sea because our Saxon forefathers were notable sea rovers Then, too, since the days of Alfred, ships and sailors have been the guardians of "this precious stone set in a silver sea," as Shakespeare called our island country.

5. The Sea

The sea, the sea, the open sea,
The blue, the fresh, the ever free!
Without a mark, without a bound,
It runneth the earth's wide regions round,
It plays with the clouds · it mocks the skies ·
Or like a cradled creature lies

I'm on the Sea! I'm on the Sea!
I am where I would ever be,
With the blue above, and the blue below,
And silence wheresoe'er I go;
If a storm should come and awake the deep,
What matter? *I* shall ride and sleep.

I love (O! *how* I love) to ride
On the fierce, foaming, bursting tide,
When every mad wave drowns the moon,
Or whistles aloft his tempest tune,
And tells how goeth the world below,
And why the south-west blasts do blow.

I never was on the dull, tame shore,
But I loved the great Sea more and more,
And backwards flew to her billowy breast,
Like a bird that seeketh its mother's nest;
And a mother she *was*, and *is* to me;
For I was born on the open Sea!

The waves were white, and red the morn,
In the noisy hour when I was born;
And the whale it whistled, the porpoise rolled,
And the dolphins bared their backs of gold;
And never was heard such an outcry wild
As welcomed to life the Ocean-child!

I've lived since then, in calm and strife,
Full fifty summers a sailor's life,
With wealth to spend, and a power to range,
But never have sought, nor sighed for change;
And Death, whenever he come to me,
Shall come on the wide unbounded Sea!

"Barry Cornwall"

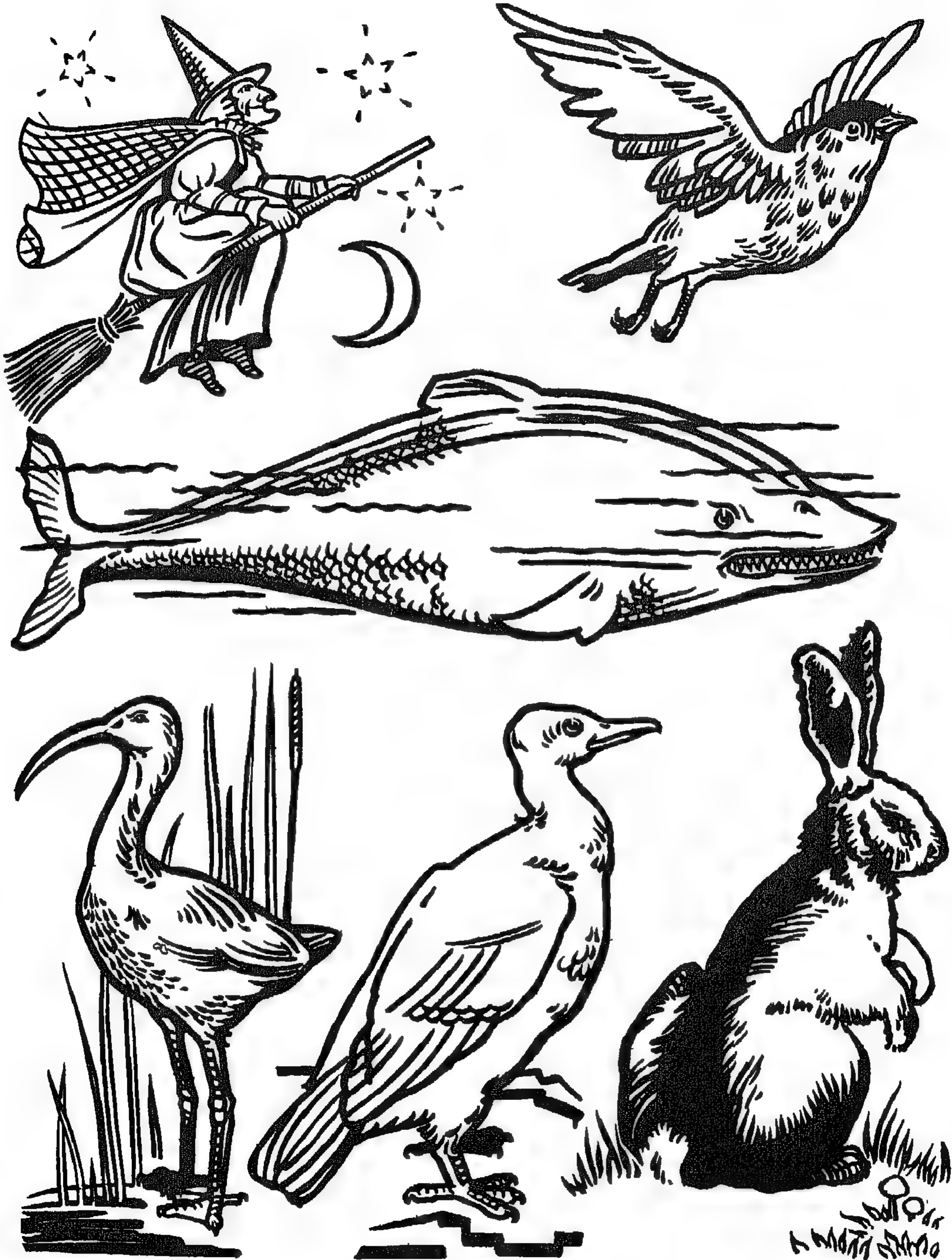
Note—This song of the sea extols its freedom, and the vast open space that stretches away to the horizon.

"The sea, the sea, the open sea,
The blue, the fresh, the ever free!"

It is sung by a sailor who was born on board ship in the midst of a storm, and has lived on the sea for fifty years He has had opportunities of travelling and settling down on land, but he does not care for "the dull, tame shore." He loves to ride the wild billows, with "the blue above, and the blue below." He thinks of the sea as his mother, and only when rocking on the waves does he feel at home

The poem is full of the vigour and freshness of a strenuous, open-air life, and should be said in a ringing voice, without hurry, but rather with the measured rhythm of the rolling waves The tone should be raised or lowered according to the meaning of the words. "Or like a cradled creature lies" is a soft line, which contrasts with such lines as—

SKETCHES FOR THE BLACKBOARD



Witch (The Wind) Porpoise (The Sea) Skylark and Rabbit (The West Wind)
Curlew and Cormorant (Introductory Stanza)

"I love (O! *how* I love) to ride
On the fierce, foaming, bursting tide,
When every mad wave drowns the moon,
Or whistles aloft his tempest tune"

In the fourth stanza the sea is personified, being spoken of as a woman, and we find a simile in which the poet compares himself with "a bird that seeketh its mother's nest." Note that "Barry Cornwall" is a *nom de plume*, or pen-name; the real name of the poet was Bryan Waller Procter. The "porpoise" belongs to the order of whale-like animals, and resembles a small whale. The "dolphin" is a somewhat similar sea mammal, but it has a large, round head

Make a list of the words used to describe the sea. What does the poet say about the land? Why does he prefer the sea? Say whether you prefer the land or the sea, and explain why. Tell all you know of whales, porpoises and dolphins. Draw and colour a picture of the sea as described in the fifth stanza. Write out a simile from the poem What wind is blowing when "every mad wave drowns the moon"? Tell a story of your own about the sea (There is a blackboard sketch of a porpoise on page 205.)

6. The Fighting Téméraire

It was eight bells ringing,
For the morning watch was done,
And the gunner's lads were singing
As they polished every gun
It was eight bells ringing,
And the gunner's lads were singing,
For the ship she rode a-swinging
As they polished every gun.

Oh! to see the linstock lighting,
Téméraire! Téméraire!
Oh! to hear the round shot biting,
Téméraire! Téméraire!
Oh! to see the linstock lighting,
And to hear the round shot biting,
For we're all in love with fighting
On the Fighting Téméraire.

It was noontide ringing,
And the battle just begun,
When the ship her way was winging
As they loaded every gun.
It was noontide ringing,
When the ship her way was winging,
And the gunner's lads were singing
As they loaded every gun.

There'll be many grim and gory,
Téméraire! Téméraire!
There'll be few to tell the story,
Téméraire! Téméraire!
There'll be many grim and gory,
There'll be few to tell the story,
But we'll all be one in glory
With the Fighting Téméraire.

There's a far bell ringing
At the setting of the sun,
And a phantom voice is singing
Of the great days done.
There's a far bell ringing,
And a phantom voice is singing
Of renown for ever clinging
To the great days done.

Now the sunset breezes shiver,
Téméraire! Téméraire!
And she's fading down the river,
Téméraire! Téméraire!
Now the sunset breezes shiver,
And she's fading down the river,
But in England's song for ever
She's the Fighting Téméraire.

Sir Henry Newbolt.

Note.—The first "Fighting Téméraire" was a wooden warship captured from the French at the battle of the Nile. Under Harvey she fought at Trafalgar, and her fine record won for her the name of "The Fighting Téméraire." She was immortalised by the artist Turner in a famous picture which shows her being towed to her last berth The second "Téméraire" was an Ironclad, and the third was a Dreadnought.

The poem is a stirring sea song with a rare lilt which makes one feel that in the

thick of the fight, for all its terrors, men forget themselves as in an exciting game:

"Oh! to see the linstock lighting,
Téméraire! Téméraire!
Oh! to hear the round shot biting,
Téméraire! Téméraire!"

In the poem are sung the events of the last glorious day in the history of the *Fighting Téméraire* In the morning, while the ship is lying at anchor, "the gunner's lads" are singing as they overhaul every gun and polish it in readiness for battle. The eager spirit of their song enters into the refrain or chorus which follows the first stanza—

"For we're all in love with fighting
On the Fighting Téméraire."

At midday the ship is sailing forth to the attack, for the battle is about to begin The gunner's lads are still singing as they load the guns with round shot. Into the second refrain, however, creeps a note of foreboding. The sailors know that they are going into danger and many lives must be lost, but they sing—

"We'll all be one in glory
With the Fighting Téméraire."

At sunset the ship's last fight is fought. She has done her duty gallantly and will be unfit for active service again, so we see her "fading down the river." Then from the distance seems to come the sound of a bell—

"And a phantom voice is singing
Of renown for ever clinging
To the great days done."

Thus though she is a battleship no longer, yet—

"In England's song for ever
She's the Fighting Téméraire"

The music and the spirit of this fine poem make a strong appeal to children. The song effect is obtained by the lilting rhythm, the refrains, and the repetition of lines and of the word Téméraire. There are many musical rhyming words, too, that end in "ing," such as "singing," "ringing," "a-swinging." The repetition works up each stanza to a climax in the seventh line, and in the recitation the pupils should "let themselves go" when saying this line The refrain to the second stanza should begin softly, and the third stanza is impressive when said in a voice scarcely above a whisper, with stress laid on the last two lines This poem in praise of brave English sailors who fought for their country is called a *patriotic* poem.

On shipboard, time is marked by the ringing of a bell. A sailor's "watch" or time of duty, lasts four hours The day is divided into three watches, and eight bells are rung at the end of each watch, that is at 4, 8 and 12 o'clock. A "linstock" was a pointed short staff tipped with iron, to hold a lighted match for firing cannon A "phantom" voice is a "ghostly" voice, a whisper.

Write out the first stanza and mark the stresses like this: "It was eíght bells ringing." Who wrote this poem? Tell all you know about the *Fighting Téméraire.* Why were the gunner's lads singing "as they polished every gun"? Tell in your own words what the "phantom voice" sang. Explain the lines—

"It was eight bells ringing,
For the morning watch was done."

Write the lines which describe the ship (*a*) lying at anchor and (*b*) sailing into battle. Why is *The Fighting Téméraire* called a patriotic poem?

7. Sea-Fever

I must go down to the sea again, to the lonely sea and the sky,
And all I ask is a tall ship and a star to steer her by,

And the wheel's kick and the wind's song and the white sail's shaking,
And a grey mist on the sea's face and a grey dawn breaking

I must down to the seas again, for the call of the running tide
Is a wild call and a clear call that may not be denied;
And all I ask is a windy day with the white clouds flying,
And the flung spray and the blown spume, and the sea-gulls crying

I must down to the seas again, to the vagrant gypsy life,
To the gull's way and the whale's way where the wind's like a whetted knife;
And all I ask is a merry yarn from a laughing fellow-rover,
And quiet sleep and a sweet dream when the long trick's over.

John Masefield.

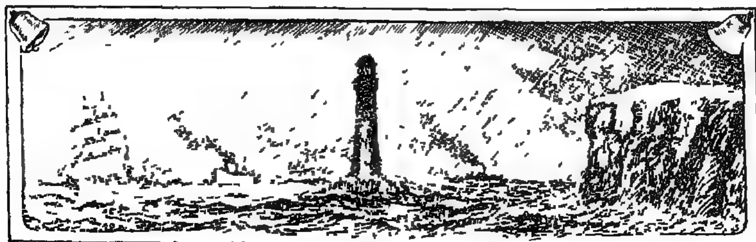
Note.—The pupils will think that this modern poem by Mr. John Masefield has a curious title. When a person is highly excited about something he is said to be "feverishly" excited, because sick persons when feverish are hot and excited The poet is feverishly excited when he thinks of the joy of being on the sea, so he calls this poem *Sea-Fever.* He tells us in the poem what he longs for, and he makes us land-lubbers feel how grand it must be to lead a wandering gypsy life on the sea. The poet ran away from school, and for some years spent a "vagrant gypsy life" on sea and land.

The poem has a fine, swinging rhythm, and many of its phrases suggest movement, so that the reader receives the impression that he himself is sailing on board "a tall ship" on a windy day, with the "white clouds flying," the sail shaking and the "sea-gulls crying" The poet portrays vivid pictures of the life that is calling him We see him far out on the lonely sea at day-break, steering his ship under the stars, or battling with the wild wind which blows over him the "spume" or white froth of the waves, or again laughing and joking amongst his merry "fellow-rovers."

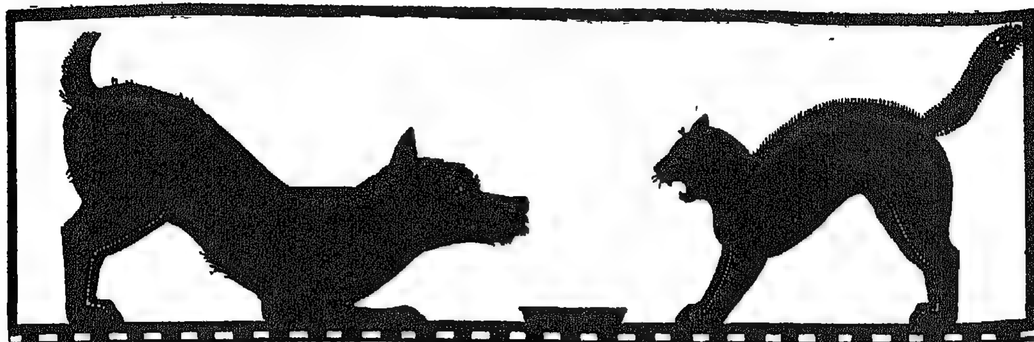
Many examples of repetition and alliteration in the poem add to its music—"the lonely sea and the sky," "a *st*ar to *st*eer her by," "a *grey* mist and a *grey* dawn," "a wild *call* and a clear *call*" The poem has been set to music by more than one composer, and the pupils' appreciation of it will be deepened if they are able to hear a good musical rendering of the poetry.

A "whetted knife" is one that has been sharpened on a whetstone. The word well expresses the keenness of the wind. A "trick" is the ordinary two-hour spell at the wheel, or on the look-out

What words are used to describe the sea? the ship? the day? the clouds? a sleep? a dream? What expressions can you find in this poem of the poet's delight in the struggle with wind and wave? Tell in your own words what the title means What is a "vagrant gypsy life"? Describe the picture suggested in the first stanza. Write (*a*) a peaceful line from the poem, and (*b*) a line that is full of movement. Of what does the rhythm remind you? If you were going to make a drawing of the poem what things would you put into your picture? (There are blackboard sketches of a sea-gull and a helmsman on page 213)



ANIMALS



"He prayeth well who loveth well
Both man and bird and beast.

"He prayeth best, who loveth best
All things both great and small,
For the dear God who loveth us,
He made and loveth all"

Samuel Taylor Coleridge

Most good people love animals, so that there are many poems about them You may remember that we noticed how William Blake loved all the living creatures he met in the country There is a long poem by Blake in which he tells people very plainly how unkind and wrong it is to neglect or ill-treat animals He talks like this about it.

"A Robin Red Breast in a Cage
Puts all Heaven in a Rage

. . . .

He who shall hurt the little Wren
Shall never be belov'd by Men.

. .

The wanton Boy who kills the Fly
Shall feel the Spider's enmity.

. . .

The Beggar's Dog and Widow's Cat,
Feed them and thou wilt grow fat."

8 A Child's Dream

I had a little dog, and my dog was very small,
He licked me in the face, and he answered to my call,
Of all the treasures that were mine, I loved him most of all

His nose was fresh as morning dew and blacker than the night;
I thought that it could even snuff the shadows and the light,
And his tail he held bravely, like a banner in a fight

His body covered thick with hair was very good to smell,
His little stomach underneath was pink as any shell;
And I loved him and honoured him, more than words can tell.

We ran out in the morning, both of us, to play,
Up and down across the fields for all the sunny day;
But he ran so swiftly—he ran right away.

I looked for him, I called him—entreatingly. Alas,
The dandelions could not speak, though they had seen him pass,
And nowhere was his waving tail among the waving grass.

I called him in a thousand ways and yet he did not come;
The pathways and the hedges were horrible and dumb
I prayed to God who never heard. My desperate soul grew numb

The sun sank low I ran, I prayed· "If God has not the power
To find him, let me die I cannot bear another hour."
When suddenly I came upon a great yellow flower.

And all among its petals, such was Heaven's grace,
In that golden hour, in that golden place,
All among its petals, was his hairy face.

Frances Cornford

Note—This poem is about a dog that belonged to a little girl She must have loved him dearly to have had such a frightening dream about him. The pictures of this dog are very real, for they vividly recall memories of our own dog, or one that we know well—his fresh black nose, his tail like a banner, his doggy smell and his hairy face.

The dream is told in a simple, unaffected way, just as a child might have related it. The poem has a fluent rhythm and should be recited in a natural manner. The child who is reciting should imagine that he himself has had the dream and is telling it to the other children. He loves his little shaggy dog and has a glorious romp with him in the meadows When his dog runs away he searches everywhere for him, growing more and more desperate and frightened until he sobs out, "'Let me die I cannot bear another hour.'" Then with joy and thankfulness he catches sight of his little pet's "hairy face" amongst the flower petals.

The poet has a real understanding of the vivid imagination of children and their intense joys and sorrows. Notice that the dandelions and hedges are personified. The dandelions are helpless persons who have seen the dog and would speak but cannot, and the hedges are "horrible" people, whose silence adds to the child's dismay In the stanzas which describe the dog are some delightful similes For instance, the dog's tail was held bravely "like a banner in a fight" and his nose was fresh "as morning dew"

When you have read the poem carefully, see if you can describe the dog, or make a drawing of him. Why did the child love her pet? What similes are used for his "stomach" and his "nose"? How did the little girl play with her dog? Why did she lose him? What did she do to find him? Write the lines which tell of her disappointments. Where did she see him at last? Why are the "hour" and the "place" called golden? Briefly relate the story of the poem

9 Nicholas Nye

Thistle and darnel and dock grew there,
And a bush, in the corner, of may,
On the orchard wall I used to sprawl
In the blazing heat of the day,
Half asleep and half awake,
While the birds went twittering by,
And nobody there my lone to share
But Nicholas Nye.

Nicholas Nye was lean and grey,
Lame of a leg and old,
More than a score of donkey's years
He had seen since he was foaled,
He munched the thistles, purple and spiked,
Would sometimes stoop and sigh,
And turn to his head, as if he said,
"Poor Nicholas Nye!"

Alone with his shadow he'd drowse in the meadow,
Lazily swinging his tail,
At break of day he used to bray,—
Not much too hearty and hale;
But a wonderful gumption was under his skin,
And a clear calm light in his eye,
And once in a while he would smile a smile—
Would Nicholas Nye

Seem to be smiling at me, he would,
  From his bush, in the corner, of may—
Bony and ownerless, widowed and worn,
  Knobble-kneed, lonely and grey;
And over the grass would seem to pass
  'Neath the deep dark blue of the sky,
Something much better than words between me
    And Nicholas Nye

But dusk would come in the apple boughs,
  The green of the glow-worm shine,
The birds in nest would crouch to rest,
  And home I'd trudge to mine,
And there, in the moonlight, dark with dew,
  Asking not wherefore nor why,
Would brood like a ghost, and as still as a post,
    Old Nicholas Nye.

Walter de la Mare

Note—Mr Walter de la Mare makes us feel very kindly towards people and animals After you have read this poem you will find yourself saying, "Poor Nicholas Nye," and when next you see a donkey you will hope that his master is kind to him Many people think that donkeys are stupid animals, but that is only when they are made stupid by heavy blows and cruel treatment The donkey called Nicholas Nye, so the poet says, had "wonderful gumption," or good sense.

The poet was fond of lying along the orchard wall, and dreaming in the sunshine with no one for company but the old donkey in the meadow on the other side Nicholas Nye sheltered under a may bush in the corner of the field, and munched the thistles that grew round about He was more than twenty years old, worn out, bony and lame, and had neither master nor mate. At daybreak he used to bray feebly. For hours he would just

"Drowse in the meadow,
  Lazily swinging his tail,"

and often when feeding he would look round towards himself and sigh, as if he said, "'Poor Nicholas Nye.'" At other times he would look with a clear, calm eye at the poet and seem to smile, as if he were glad of his presence, and knew that they were friends.

"And over the grass would seem to pass
'Neath the deep dark blue of the sky,
Something much better than words between me
And Nicholas Nye."

The poem is beautiful not only for its pity of the dumb animal but also for its language and music. Many middle rhymes add to the smooth running of the rhythm, and the short line at the end of each stanza has the same effect as the closing bar of a song. Notice the musical sound of the vowel repetition in "bony and ownerless," and of the alliteration in—

"*W*idowed and *w*orn,
*Kn*obble-*kn*eed, lo*n*ely and grey . . . .
  And *N*icholas *N*ye."

When reciting the poem, dwell a little on the descriptive words, in order to convey the atmosphere of the pictures portrayed For instance, in the last four lines, which should be spoken softly, linger over the phrases "dark with dew" and "brood like a ghost"; and say slowly in a whisper "as still as a post" These phrases and others such as "drowse in the meadow," "sometimes stoop and sigh," "blazing heat of the day," might be monotoned softly by the pupils, in order to bring out their beauty and significance.

Why do you like this poor old donkey? Make a list of the descriptive words used about him. How does the poet make us feel the loneliness of the donkey? Describe what the poet saw from the orchard wall. What do you think it was that passed between him and Nicholas Nye? Write down lines which suggest colour to you Give six examples of middle rhymes from the poem. Write the first stanza marking the strong beats in the lines Find examples of alliteration in the poem. Tell in your own words the meaning of—

(a) "A wonderful gumption was under his skin"
(b) "Bony and ownerless, widowed and worn"
(c) "More than a score of donkey's years
He had seen since he was foaled"

(There is a blackboard sketch of a donkey on page 213)

10 Milk for the Cat

When the tea is brought at five o'clock,
And all the neat curtains are drawn with care,
The little black cat with bright green eyes
Is suddenly purring there.

At first she pretends, having nothing to do,
She has come in merely to blink by the grate,
But, though tea may be late or the milk may be sour,
She is never late.

And presently her agate eyes
Take a soft large milky haze,
And her independent casual glance
Becomes a stiff hard gaze.

Then she stamps her claws or lifts her ears
Or twists her tail and begins to stir,
Till suddenly all her lithe body becomes
One breathing trembling purr

The children eat and wriggle and laugh,
The two old ladies stroke their silk.
But the cat is grown small and thin with desire,
Transformed to a creeping lust for milk

The white saucer like some full moon descends
At last from the clouds of the table above;
She sighs and dreams and thrills and glows,
Transfigured with love.

She nestles over the shining rim,
Buries her chin in the creamy sea;
Her tail hangs loose; each drowsy paw
Is doubled under each bending knee

A long dim ecstasy holds her life;
Her world is an infinite shapeless white,
Till her tongue has curled the last holy drop,
Then she sinks back into the night,

Draws and dips her body to heap
Her sleepy nerves in the great arm-chair,
Lies defeated and buried deep
Three or four hours unconscious there.

Harold Monro.

Note—Those of us who have cats of our own realise how *exactly* this poem describes puss, and how true is everything that the poet tells us. He says that his cat is a black one. Always at tea time she is given a saucer of milk, and so when the clock strikes five, she is sure to be found sitting by the grate At first she merely looks about with an "independent casual glance" Then the longing for milk gradually takes possession of her A misty gleam comes into her eyes. She moves her tail restlessly, tries her claws, and purrs Her whole body seems to shrink in her intense concentration on the approaching delight When at last she sees the saucer of milk descending, she glows with rapture and gives herself up to a "long dim ecstasy" of drinking Having emptied the saucer, puss withdraws into the depths of the arm-chair and sinks comfortably to sleep

Some of the lines in the poem are very striking. How true is the phrase "one breathing trembling purr"! Can we not *see* our hungry cat stealing across the room to its saucer—"Transformed to a creeping lust for milk"? Here is not a tenderness for the animal, such as we find in the poem of "Nicholas Nye," but an artist's careful observation of it, recorded in clever and vivid language. The cat's obsession is emphasised by the contrast in the behaviour of the human beings at the tea table The children "wriggle and laugh" as they eat, and the old ladies "stroke their silk." They do not concentrate on their tea as the cat does.

Note the simile in the sixth stanza—"the white saucer *like some full moon* descends"—

SKETCHES FOR THE BLACKBOARD



HIGHWAYMAN (THE HIGHWAYMAN)

DONKEY (NICHOLAS NYE)

SEA-GULL AND HELMSMAN (SEA-FEVER)
CLOVER (THE SHADOW PEOPLE)
PIG (THE TEMPTATION OF SAINT ANTHONY)

and the metaphor "from the clouds of the table above," implying a comparison between the white cloth and the sky. The last lines of the stanzas are not all of the same length Some have four strong beats and others three. The longer lines occur when they express a long-continued thought, and thus the rhythm is in harmony with the sense of the poetry. For instance, when the cat is drinking—

"Each drowsy paw
Is doŭbled ŭnder each bĕnding knĕe"—

and similarly when she is asleep. Such lines must not be hurried in the recitation of the poem.

Some of the words are a little difficult and need to be explained to the class. "Agate" is a precious stone having its colours arranged in stripes or bands, "ecstasy" means "state of being filled with joy", "lust" means "longing" or "desire."

Why does puss always come indoors at five o'clock? How do her eyes change when she begins to expect her milk? In what other ways does she show eagerness? What example is there in this poem of the use of simile? Describe the cat when she is drinking her milk. Explain the following phrases: "the creamy sea"; "transfigured with love"; "the last holy drop" What do you notice about the sound of certain letters in: "She sighs and dreams and thrills and glows"? Quote lines from the poem that please you, and explain why you have chosen them. Write the rhyme scheme of the first three stanzas. Tell a story about any cat you have had or have seen.

NARRATIVE AND DESCRIPTIVE

"So among the guests assembled
At my Hiawatha's wedding
Sat Iagoo, old and ugly,
Sat the marvellous story-teller.
And they said, 'O good Iagoo,
Tell us now a tale of wonder,
Tell us of some strange adventure,
That the feast may be more joyous,
That the time may pass more gaily,
And our guests be more contented!'"

Longfellow.

A narrative is a story. Many poems are written to describe incidents that have come to the notice of the poet, or it may be that he weaves some fanciful thought into a narrative poem The stirring deeds of brave men and women throughout the ages have also proved countless themes for verse, and we sometimes find good poetry pleasingly descriptive of simple historical scenes and incidents.

II. The Highwayman

Part One

The wind was a torrent of darkness among the gusty trees,
The moon was a ghostly galleon tossed upon cloudy seas,
The road was a ribbon of moonlight over the purple moor,
And the highwayman came riding—
Riding—Riding—
The highwayman came riding up to the old inn-door.

He'd a French cocked-hat on his forehead, a bunch of lace at his chin,
A coat of the claret velvet, and breeches of brown doe-skin,
They fitted with never a wrinkle: his boots were up to the thigh!



And he rode with a jewelled twinkle,
His pistol butts a-twinkle,
His rapier hilt a-twinkle, under the jewelled sky.

Over the cobbles he clattered and clashed in the dark inn-yard,
And he tapped with his whip on the shutters, but all was locked and barred;
He whistled a tune to the window, and who should be waiting there
But the landlord's black-eyed daughter,
Bess, the landlord's daughter,
Plaiting a dark red love-knot into her long black hair.

And dark in the dark old inn-yard a stable-wicket creaked
Where Tim the ostler listened, his face was white and peaked;
His eyes were hollows of madness, his hair like mouldy hay,
But he loved the landlord's daughter,
The landlord's red-lipped daughter,
Dumb as a dog he listened, and he heard the robber say—

"One kiss, my bonny sweetheart, I'm after a prize to-night,
But I shall be back with the yellow gold before the morning light;
Yet, if they press me sharply, and harry me through the day,
Then look for me by moonlight,
Watch for me by moonlight,
I'll come to thee by moonlight, though hell should bar the way."

He rose upright in the stirrups, he scarce could reach her hand,
But she loosened her hair i' the casement;
His face burnt like a brand
As the black cascade of perfume came tumbling over his breast,

And he kissed its waves in the moonlight,
(Oh, sweet black waves in the moonlight!)
Then he tugged at his rein in the moonlight, and galloped away to the West.

PART TWO

He did not come in the dawning; he did not come at noon,
And out o' the tawny sunset, before the rise o' the moon,
When the road was a gipsy's ribbon, looping the purple moor,
A red-coat troop came marching—
Marching—marching—
King George's men came marching up to the old inn-door.

They said no word to the landlord, they drank his ale instead,
But they gagged his daughter and bound her to the foot of her narrow bed;
Two of them knelt at her casement, with muskets at their side!
There was death at every window;
And hell at one dark window;
For Bess could see, through her casement, the road that *he* would ride.

They had tied her up to attention, with many a sniggering jest;
They had bound a musket beside her, with the barrel beneath her breast!
"Now keep good watch!" and they kissed her.
She heard the dead man say—
Look for me by moonlight,
Watch for me by moonlight;
I'll come to thee by moonlight, though hell should bar the way!

She twisted her hands behind her, but all the knots held good!
She writhed her hands till her fingers were wet with sweat or blood!
They stretched and strained in the darkness, and the hours crawled by like years,
Till, now, on the stroke of midnight,
Cold, on the stroke of midnight,
The tip of one finger touched it! The trigger at least was hers!

The tip of one finger touched it; she strove no more for the rest!
Up, she stood up to attention, with the barrel beneath her breast,
She would not risk their hearing; she would not strive again;
For the road lay bare in the moonlight;
Blank and bare in the moonlight,
And the blood of her veins in the moonlight throbbed to her love's refrain.

Tlot-tlot, tlot-tlot! Had they heard it? The horse-hoofs ringing clear;
Tlot-tlot; tlot-tlot! in the distance? Were they deaf that they did not hear?
Down the ribbon of moonlight, over the brow of the hill,
The highwayman came riding,
Riding, riding!
The red-coats looked to their priming! She stood up, straight and still!

Tlot-tlot, in the frosty silence! *Tlot-tlot,* in the echoing night!
Nearer he came and nearer! Her face was like a light!
Her eyes grew wide for a moment; she drew one last deep breath,
Then her finger moved in the moonlight,
Her musket shattered the moonlight,
Shattered her breast in the moonlight and warned him—with her death.

He turned, he spurred to the Westward; he did not know who stood
Bowed, with her head o'er the musket, drenched with her own red blood!
Not till the dawn he heard it, and slowly blanched to hear
How Bess, the landlord's daughter,
The landlord's black-eyed daughter,
Had watched for her love in the moonlight, and died in the darkness there.

Back, he spurred like a madman, shrieking a curse to the sky,
With the white road smoking behind him and his rapier brandished high!
Blood-red were his spurs i' the golden noon, wine-red was his velvet coat;
When they shot him down on the highway,
Down like a dog on the highway,
And he lay in his blood on the highway, with the bunch of lace at his throat.

. . .

And still of a winter's night, they say, when the wind is in the trees,
When the moon is a ghostly galleon tossed upon cloudy seas,
When the road is a ribbon of moonlight over the purple moor,
A highwayman comes riding—
Riding—riding—
A highwayman comes riding, up to the old inn-door

Over the cobbles he clatters and clangs in the dark inn-yard,
And he taps with his whip on the shutters, but all is locked and barred,
He whistles a tune to the window, and who should be waiting there
But the landlord's black-eyed daughter,
Bess, the landlord's daughter,
Plaiting a dark red love-knot into her long black hair

Alfred Noyes.

Note—This poem by Mr Alfred Noyes tells a thrilling story of a bold highwayman and the brave lady he loved who gave her life in vain to save him Because the highwayman lived by robbing passengers on the roads, he was in constant danger of being put to death by the officers of the law. Consequently it was not safe for him to be seen about openly during the day, so he visited his sweetheart, the innkeeper's daughter, by moonlight He told her that he was "after a prize" and would return "with the yellow gold" on the next night—

"'Then look for me by moonlight,
Watch for me by moonlight,
I'll come to thee by moonlight, though hell should bar the way!'"

His words were overheard by Tim, the ostler, who also loved the innkeeper's daughter. He betrayed the highwayman to the officers of the law, who sent a troop of soldiers to the inn to waylay the robber and shoot him. In cruel mockery they tied up his sweetheart near her little window and bound a gun beside her, telling her to keep watch with the rest of them When she heard her lover's horse approaching, the faithful girl fired the gun to which she was fastened, but the explosion which warned the highwayman to escape killed his preserver Later, on hearing the news, he galloped back to avenge her death, and was shot down and killed on the highway.

The poem has a musical lilt and is rich in descriptive phrases—

"The moon was a ghostly galleon tossed upon cloudy seas,
The road was a ribbon of moonlight over the purple moor . . . .
He rode with a jewelled twinkle—under the jewelled sky."

Observe how the poet chooses his words to suggest the meaning of the subject about which he is writing We can both *see* and *hear* the galloping horse in the lines—

"Over the cobbles he clattered and clashed in the dark inn-yard . . . .
Tlot-tlot, tlot-tlot! Had they heard it?
The horse-hoofs ringing clear—"

In the darkness and silence of the inn-yard we hear the sounds made as he "tapped" and "whistled," and a stable-wicket "creaked" Again in the description of the poor girl tied fast during the long night; she "twisted," "writhed," "stretched and strained" her hands towards the trigger of the gun.

There are also many suggestions of colour in the poem—

"A coat of the claret velvet, and breeches of brown doe-skin . . .
Plaiting a dark red love-knot into her long black hair . .
And out o' the tawny sunset, before the rise o' the moon,
When the road was a gipsy's ribbon, looping the purple moor . .
Blood-red were his spurs i' the golden noon, wine-red was his velvet coat"

The picture of Tim the ostler as described in the fourth stanza is a vivid one, and some of the similes in the poem are very striking—"his hair *like mouldy hay*"; "dumb *as a dog*", "back he spurred *like a madman*" No less imaginative are the metaphors of the wind, moon and road in the first stanza, "the black cascade of perfume" which tumbled over the window ledge; the guns symbolising "death at every window; and hell at one dark window"; and "the white road smoking behind him," as if the clouds of dust were the smoke of a fire kindled by the heat of the highwayman's gallop

The poem makes an admirable recitation and is a favourite with pupils. It should be said rather quickly, but care must be taken to avoid "gabbling," or falling into a "sing-song" rendering of the musical rhythm The onomatopoetic words such as "tossed," "clatters," "clangs," "taps," should be slightly stressed in the recitation.

Describe the highwayman riding to the inn. What does he do when he arrives? Describe Tim the ostler. How did the landlord's daughter show her bravery? Do you think that the ostler betrayed the highwayman? Why? Write out all the similes that you can find in the poem. Which lines suggest the sound of a galloping horse? Write out some metaphors from the poem, and say what comparison is suggested in each. What do you understand by the last two stanzas? Describe the pictures that you would like to draw of this poem. Find words in the poem of which the sounds convey the meanings Why do you enjoy reading "The Highwayman"? (There is a blackboard sketch of a highwayman on page 213)

12. The Lady of Shalott

Part I

On either side the river lie
Long fields of barley and of rye,
That clothe the wold and meet the sky,
And through the field the road runs by
To many-tower'd Camelot;
And up and down the people go,
Gazing where the lilies blow
Round an island there below,
The island of Shalott

Willows whiten, aspens quiver,
Little breezes dusk and shiver
Through the wave that runs for ever
By the island in the river
Flowing down to Camelot.
Four gray walls, and four gray towers,
Overlook a space of flowers,
And the silent isle embowers
The Lady of Shalott

By the margin, willow-veil'd,
Slide the heavy barges trail'd
By slow horses, and unhail'd
The shallop flitteth silken-sail'd
Skimming down to Camelot:
But who hath seen her wave her hand?
Or at the casement seen her stand?
Or is she known in all the land,
The Lady of Shalott?

Only reapers, reaping early
In among the bearded barley,
Hear a song that echoes cheerly
From the river winding clearly,
Down to tower'd Camelot.
And by the moon the reaper weary,
Piling sheaves in uplands airy,
Listening, whispers "'Tis the fairy
Lady of Shalott."

PART II.

There she weaves by night and day
A magic web with colours gay
She has heard a whisper say,
A curse is on her if she stay
To look down to Camelot.
She knows not what the curse may be,
And so she weaveth steadily,
And little other care hath she,
The Lady of Shalott.

And moving through a mirror clear
That hangs before her all the year,
Shadows of the world appear.
There she sees the highway near
Winding down to Camelot;
There the river eddy whirls,
And there the surly village-churls,
And the red cloaks of market girls,
Pass onward from Shalott

Sometimes a troop of damsels glad,
An abbot on an ambling pad,
Sometimes a curly shepherd-lad,
Or long-hair'd page in crimson clad,
Goes by to tower'd Camelot;
And sometimes through the mirror blue
The knights come riding two and two·
She hath no loyal knight and true,
The Lady of Shalott

But in her web she still delights
To weave the mirror's magic sights,
For often through the silent nights
A funeral, with plumes and lights,
And music, went to Camelot:
Or when the moon was overhead,
Came two young lovers lately wed,—
"I am half sick of shadows," said
The Lady of Shalott.

PART III.

A bow-shot from her bower-eaves,
He rode between the barley-sheaves;
The sun came dazzling through the leaves,
And flamed upon the brazen greaves
Of bold Sir Lancelot.
A red-cross knight for ever kneel'd
To a lady in his shield,
That sparkled on the yellow field
Beside remote Shalott.

The gemmy bridle glitter'd free,
Like to some branch of stars we see
Hung in the golden Galaxy.
The bridle bells rang merrily
As he rode down to Camelot.
And from his blazon'd baldric slung
A mighty silver bugle hung,
And as he rode his armour rung
Beside remote Shalott.

All in the blue unclouded weather
Thick-jewell'd shone the saddle-leather,
The helmet and the helmet-feather
Burn'd like one burning flame together,
As he rode down to Camelot:
As often through the purple night,
Below the starry clusters bright,
Some bearded meteor, trailing light,
Moves over still Shalott.

His broad clear brow in sunlight glow'd;
On burnish'd hooves his war-horse trode,
From underneath his helmet flow'd
His coal-black curls as on he rode,
As he rode down to Camelot
From the bank and from the river
He flash'd into the crystal mirror,
"Tirra lirra," by the river
Sang Sir Lancelot.

She left the web, she left the loom,
She made three paces through the room,
She saw the water-lily bloom,
She saw the helmet and the plume,
She look'd down to Camelot.
Out flew the web and floated wide;
The mirror crack'd from side to side·
"The curse is come upon me," cried
The Lady of Shalott.

PART IV.

In the stormy east-wind straining,
The pale yellow woods were waning,
The broad stream in his banks complaining,
Heavily the low sky raining
Over tower'd Camelot,
Down she came and found a boat
Beneath a willow left afloat,
And round about the prow she wrote
The Lady of Shalott.

And down the river's dim expanse—
Like some bold seër in a trance,
Seeing all his own mischance—
With a glassy countenance
    Did she look to Camelot.
And at the closing of the day
She loosed the chain, and down she lay,
The broad stream bore her far away,
    The Lady of Shalott

Lying, robed in snowy white
That loosely flew to left and right—
The leaves upon her falling light—
Through the noises of the night
    She floated down to Camelot
And as the boat-head wound along
The willowy hills and fields among,
They heard her singing her last song,
    The Lady of Shalott—

Heard a carol, mournful, holy,
Chanted loudly, chanted lowly,
Till her blood was frozen slowly,
And her eyes were darken'd wholly,
    Turn'd to tower'd Camelot,
For ere she reach'd upon the tide
The first house by the water-side,
Singing in her song she died,
    The Lady of Shalott.

Under tower and balcony,
By garden-wall and gallery,
A gleaming shape she floated by,
Dead-pale between the houses high,
    Silent into Camelot.
Out upon the wharfs they came,
Knight and burgher, lord and dame,
And round the prow they read her name,
    The Lady of Shalott

Who is this, and what is here?
And in the lighted palace near
Died the sound of royal cheer,
And they cross'd themselves for fear,
    All the knights at Camelot:
But Lancelot mused a little space;
He said, "She has a lovely face;
God in His mercy lend her grace,
    The Lady of Shalott."

Lord Tennyson.

Note—There is a Coloured Class Picture (No. 155 in the portfolio) of "The Lady of Shalott." It shows a fair-haired maiden sitting in a boat and gazing sadly down the "dim expanse" of a stream She has loosed the boat from its mooring and still holds the chain in her hand A beautiful silken cloth has been spread for her to lie on, and its edges hang over the sides of the boat. Her dress is "snowy white" On the prow or front of the boat she has written her name, "The Ladie of Shalott." The gloom of evening makes everything appear misty and shadowy Yellow autumn leaves have fallen into the water, and the reeds on the banks are changing colour Behind her rises a willow tree, and the boat has been fastened to one of the white posts in front of it. From the stem of the boat hangs a lantern.

The pupils will be anxious to learn the story of this lady, and Tennyson's poem *The Lady of Shalott* should be read to them, After the reading a discussion might follow during which the teacher can make clear any points which the pupils have not understood, and satisfy himself that they have grasped the narrative This done, the poetry should then be considered in detail.

The poem has been set to music by more than one composer The rhythm flows gently along like a "winding river," all the lines save one in each stanza being of the same length. The short lines at the ends of the stanzas make regular pauses in the music. The rhyme scheme is unusual and gives a haunting effect to the music.

As we read the poem many beautiful pictures seem to pass before our eyes. We see the river flowing down between the cornfields to "many-tower'd Camelot," and in midstream is the island on which stands the silent gray castle of the Lady of Shalott. There is a splendid portrait of Lancelot, followed by a picture of the Lady of Shalott aghast at the sudden ruin of her work and happiness.

The words of the poetry are carefully chosen to express exactly the sound and meaning which the poet wishes to convey, and he makes frequent use of alliteration He speaks

of the stream as "complaining"; and we also find such musical and descriptive phrases as "an abbot on an ambling pad"; "little breezes dusk and shiver"; and "the shallop flitteth silken-sail'd" Notice the suggestion of colour in "red cloaks"; "crimson clad"; "mirror blue"; "yellow field"; "blue unclouded weather"; "purple night", and "pale yellow woods" The poetry is also enriched with similes. Lancelot's bridle was jewelled "like to some branch of stars . . . hung in the golden Galaxy"; his helmet and feather were like a "burning flame", and he himself resembled "some bearded meteor, trailing light" The Lady of Shalott sitting in the boat looked "like some bold seer in a trance."

The poet imagines that nature is in sympathy with his characters, and thus adds to the vividness of his pictures Upon "blod Sir Lancelot" shone bright sunlight, but when the sad Lady of Shalott stole out to find a boat, wild winds were bowing the trees, scattering the pale leaves, and "heavily the low sky raining"

Camelot or *Caerleon* is a town on the river Usk in Monmouthshire, and one of the legendary capitals of King Arthur; a "pad" is a small, easy-paced horse or pony for riding; "greaves" are pieces of armour covering the shins, the "golden Galaxy" is the Milky Way, a shining band of stars which encircles the heavens; a "shallop" is a light, open boat; a "blazon'd baldric" is a belt for a sword or bugle hung from the shoulder to the opposite hip and "blazoned" or ornamented with the wearer's coat of arms.

Let the pupils begin the recitation of the poem in a narrative manner, speaking rather slowly and dwelling on the descriptive phrases which build up the scene Something of awe should enter into the reaper's whisper, "'Tis the fairy Lady of Shalott'," and the voice should be modulated to suit the varying descriptions of the sights shown in the magic mirror

Briefly relate the story of the poem Describe the sights seen in her mirror by the Lady of Shalott Explain the following—

(*a*) "By the margin, willow-veil'd,
Slide the heavy barges trail'd
By slow horses."

(*b*) "And from his blazon'd baldric slung
A mighty silver bugle hung."

Write out three similes from the poem. Find examples of the use of alliteration. Tell all you know of Sir Lancelot Why do you think the reaper *whispered*, "'Tis the *fairy* Lady of Shalott"? Write the rhyme scheme of the first stanza Quote lines from the poem describing people whom we should not see nowadays. Which lines should be said (*a*) in a whisper (*b*) merrily (*c*) hurriedly (*d*) reverently?



[*Photo* *Mayall*

ALFRED TENNYSON

13. ADMIRALS ALL.

Effingham, Grenville, Raleigh, Drake,
  Here's to the bold and free!
Benbow, Collingwood, Byron, Blake,
  Hail to the Kings of the Sea!
Admirals all, for England's sake,
  Honour be yours and fame!
And honour, as long as waves shall break,
  To Nelson's peerless name!
    Admirals all, for England's sake,
      Honour be yours and fame!
    And honour, as long as waves shall break,
      To Nelson's peerless name!

Essex was fretting in Cadiz Bay
  With the galleons fair in sight;
Howard at last must give him his way
  And the word was passed to fight
Never was schoolboy gayer than he,
  Since holidays first began,
He tossed his bonnet to wind and sea,
  And under the guns he ran.

Drake nor devil nor Spaniard feared,
  Their cities he put to the sack,
He singed his Catholic Majesty's beard,
  And harried his ships to wrack.
He was playing at Plymouth a rubber of bowls
  When the great Armada came;
But he said, "They must wait their turn, good souls,"
  And he stooped, and finished the game

Fifteen sail were the Dutchmen bold,
  Duncan he had but two
But he anchored them fast where the Texel shoaled
  And his colours aloft he flew
"I've taken the depth to a fathom," he cried,
  "And I'll sink with a right good will,
For I know when we're all of us under the tide,
  My flag will be fluttering still."

Splinters were flying above, below,
  When Nelson sailed the Sound
"Mark you, I wouldn't be elsewhere now,"
  Said he, "for a thousand pound!"
The Admiral's signal bade him fly,
  But he wickedly wagged his head,
He clapped the glass to his sightless eye
  And "I'm damned if I see it," he said.

Admirals all, they said their say
  (The echoes are ringing still),
Admirals all, they went their way
  To the haven under the hill.
But they left us a kingdom none can take,
  The realm of the circling sea,
To be ruled by the rightful sons of Blake
  And the Rodneys yet to be
    Admirals all, for England's sake,
      Honour be yours and fame!
    And honour, as long as waves shall break,
      To Nelson's peerless name!

Sir Henry Newbolt.

Note.—In this inspiriting poem the poet sings of the dauntless bravery of some English "Kings of the Sea." He begins with the names of four great Elizabethan sailors: Lord Howard of Effingham, who commanded the English navy against the Spanish Armada; Sir Richard Grenville, the hero of Tennyson's poem *The Revenge*; and the men so well-known in history—Raleigh and Drake With these four names are coupled those of Benbow, Collingwood, Byron and Blake

Admiral John Benbow was the hero of a sea-battle in the West Indies against the French in 1702. In his last fight both his legs were cut off by chain shot.

Lord Collingwood was in many sea fights including those of Cape St Vincent and Trafalgar, where he led the *Royal Sovereign*. On Nelson's death Collingwood succeeded to the command of the fleet.

John Byron sailed as a midshipman with Anson on his voyage round the world in 1740.

Robert Blake was commander of the fleet during the Commonwealth, and proved himself more than a match for Prince Rupert who harried the Commonwealth ships, and for the great Dutch admiral Van Tromp.

The rhythm has a vivacious swing suggestive of the "bold and free" natures of the heroes of the poem. We see them all smiling in the face of danger. When Essex comes to grips with his enemy he is as gay as a schoolboy on holiday; Drake has such little fear of the great Armada that he will not allow the news of its approach to interrupt his game of bowls, and Duncan, when outnumbered by fifteen ships to two, cheerily cries that he is content to sink—

"'For I know when we're all of us under the tide,
My flag will be fluttering still.'"

Nelson, the hero of heroes, is in such imminent danger in battle that the admiral signals to him to fly. He holds the telescope to his blind eye and so cannot see the signal, for he is determined not to turn his back on the enemy. By such fearless deeds the Sea Kings gained the mastery of the ocean, and the poet proposes a toast to them—

"Admirals all, for England's sake,
Honour be yours and fame!
And honour, as long as waves shall break,
To Nelson's peerless name!"

The words and phrases of the poem are consistent with its lively spirit—"fretting," "tossed," "harried," "aloft he flew," "right good will"; and alliteration contributes to the easy flow of the lines—

"My *f*lag will be *f*luttering still . . . .
He *w*ickedly *w*agged his head."

The recitation should be as dramatic as possible, spoken in a strong voice, rather slowly on the whole, but hastened wherever the sense demands it, as in "Under the guns he ran" and "The Admiral's signal bade him fly." Try to bring into the tone some of the boldness and energy of the characters described, and speak their words with emphasis.

Robert Devereux Essex, a notable favourite of Queen Elizabeth, was a soldier, sailor and poet. He took part in Drake's expedition to Cadiz when some of the ships of the Spanish Armada were destroyed. This exploit put off the sailing of the Armada for a year, and was described by Drake as "Singeing his Catholic Majesty's beard."

Adam Duncan is specially famous for his decisive victory over the Dutch fleet off the village of Camperdown, in 1797. In consequence of a mutiny he had only two ships, but with these he blockaded the Dutch fleet in the shallow water between the island of Texel and the coast of Holland.

George Rodney entered the navy at the age of fourteen, and saw much fighting during his service. He is specially remembered for his victory off Cape St. Vincent, where he utterly defeated the Spanish fleet and relieved Gibraltar that was being besieged.

Why is the poem *Admirals All* so called? Can you explain the following? (*a*) "To Nelson's peerless name!" (*b*) "'I've taken the depth to a fathom', he cried." Quote lines from this poem which illustrate brave men's indifference to danger. Describe the third stanza in your own words. How was it that Nelson did not see the Admiral's signal? What kind of poem would you call this? How does it make you feel? What sort of music do you think the poetry makes? For what have we to thank our great admirals?

14. The Princess and the Gypsies

As I looked out one May morning
I saw the tree-tops green;
I said: "My crown I will lay down
And live no more a queen."

Then I tripped down my golden steps
Dressed in my silken gown,
And when I stood in the open wood
I met some gypsies brown.

"O gentle, gentle gypsies
That roam the wide world through,
Because I hate my crown and state,
O let me come with you!

"My councillors are old and gray
And sit in narrow chairs,
But you can hear the birds sing clear
And your hearts are as light as theirs"

"If you would come along with us
Then you must count the cost,
For though in Spring the sweet birds sing,
In Winter comes the frost

"Your ladies serve you all the day
With courtesy and care,
Your fine-shod feet they tread so neat
But a gypsy's feet go bare.

"You wash in water running warm
Through basins all of gold,
The streams where we roam have silvery foam,
But the streams, the streams are cold

"And barley bread is bitter to taste,
Whilst sugary cakes they please.
Which will you choose, O which will you choose,
Which will you choose of these?

"For if you choose the mountain streams
And barley bread to eat,
Your heart will be free as the birds in the tree
But the stones will cut your feet

"The mud will spoil your silken gown
And stain your insteps high,
The dogs in the farm will wish you harm
And bark as you go by.

"And though your heart grow deep and gay
And your heart grow wise and rich,
The cold will make your bones to ache
And you will die in a ditch"

"O gentle, gentle gypsies
That roam the wide world through,
Although I praise your wandering ways
I dare not come with you."

I hung about their fingers brown
My ruby rings and chain,
And with my head as heavy as lead
I turned me back again

As I went up the palace steps
I heard the gypsies laugh;
The birds of Spring so sweet did sing,
My heart it broke in half.

Frances Cornford.



Note—In this poem the princess herself tells the story She has grown tired of her life at court where she has to be guided by her councillors, and must always be dignified and proud It is a spring morning, the birds are singing and all the tree-tops are green The princess longs for a free life and a light heart, and so she runs away from her palace and wanders into a wood. There she meets "some gypsies brown," and begs them to take her as one of their party, for they have the whole wide world for their home and are as care-free as the birds.

The gypsies warn her to think carefully before she decides to join them, and they

point out to her all the disadvantages of their life as compared with her own As they talk the princess's heart fails her. She longs for their freedom, but she cannot face the hardships that accompany it So at last she gives them the jewels that she is wearing and turns back sadly to her palace. As she goes up the steps she hears the gypsies laughing because she has chosen to shut her spirit in prison rather than suffer bodily discomfort, and, torn between longing and dread, her heart "it broke in half"

The story is told in a simple, natural way and in this manner it should also be recited, the pupil taking the class into his confidence as though he were relating an experience of his own. It begins eagerly and hopefully, the gypsies' words should be said in a strong, warning tone; the last three verses have a trembling sadness in them, as of a bitter disappointment.

The rhythm ripples gently along and the middle rhymes add to its easy flow It typifies the mild, irresolute nature of the princess The poem gives us alternate pictures of the warm, bright palace and of the wide world with its stony pathways, its silvery streams that chill the fingers and its farmhouses whose inmates are unfriendly to gypsies. Notice the repetition which *insists* on our thinking over the differences between the caged life and the wild one—

"Which will you choose, O which will you choose,
Which will you choose of these?"

Describe the appearance of the princess. In what ways, do you think, did the gypsies look different from the princess? Why did the princess leave her palace? What did she want to do? What good things did the gypsies offer her? What are the hardships of a gypsy life? Why was the princess's head as heavy as lead? Can you tell why the gypsies laughed as the princess went up the palace steps? Write three examples each of middle rhymes and end rhymes from the poem Why should a gypsy's heart be "deep and gay and wise and rich"? What would you have done in the princess's place? Give reasons for your answer.

15. The Secret of the Machines

(Modern Machinery)

We were taken from the ore-bed and the mine,
We were melted in the furnace and the pit—
We were cast and wrought and hammered to design,
We were cut and filed and tooled and gauged to fit.
Some water, coal, and oil is all we ask,
And a thousandth of an inch to give us play:
And now if you will set us to our task,
We will serve you four and twenty hours a day!

We can pull and haul and push and lift and drive,
We can print and plough and weave and heat and light,
We can run and jump and swim and fly and dive,
We can see and hear and count and read and write!

Would you call a friend from half across the world?
If you'll let us have his name and town and state,
You shall see and hear your crackling question hurled
Across the arch of heaven while you wait.
Has he answered? Does he need you at his side?
You can start this very evening if you choose,
And take the Western Ocean in the stride
Of seventy thousand horses and some screws!

The boat-express is waiting your command!
You will find the *Mauretania* at the quay,
Till her captain turns the lever 'neath his hand,
And the monstrous nine-decked city goes to sea.

Do you wish to make the mountains bare their head
And lay their new-cut forests at your feet?
Do you want to turn a river in its bed,
Or plant a barren wilderness with wheat?
Shall we pipe aloft and bring you water down
From the never-failing cisterns of the snows,
To work the mills and tramways in your town,
And irrigate your orchards as it flows?

It is easy! Give us dynamite and drills!
Watch the iron-shouldered rocks lie down and quake
As the thirsty desert-level floods and fills,
And the valley we have dammed becomes a lake.

But remember, please, the Law by which we live,
We are not built to comprehend a lie.
We can neither love nor pity nor forgive,
If you make a slip in handling us you die!
We are greater than the Peoples or the Kings—
Be humble, as you crawl beneath our rods!—
Our touch can alter all created things,
We are everything on earth—except The Gods!

Though our smoke may hide the Heavens from your eyes,
It will vanish and the stars will shine again,
Because, for all our power and weight and size,
We are nothing more than children of your brain!

Rudyard Kipling

Note.—Here we have poetry which sings of modern times. The mighty machines in the poem are personified—speaking as if they are living persons They tell us how they have come into being, what food they require, and how well and long they will serve us The marvellous works that they do seem to equal the feats of the genii in the stories of the *Arabian Nights*

You will find it very interesting to examine the lines of the poem and test your own knowledge of the machines that "pull and haul and push and lift and drive" There is a great deal of accurate scientific knowledge included in the poem.

The whole poem leads up to the last stanza, which needs to be read very carefully, if you are to find out the secret of the machines It is because the secret can be whispered in poetry better than it can be spoken out loud in prose that Mr. Rudyard Kipling, who wrote prose as well as poetry, chose to put it in a poem Part of his meaning we may express in this way Machines are, like fire, very good servants, but very bad masters If we worship them and make them our gods—if we think that the world should be ruled by the power of machinery—we are making a terrible mistake For the mind of man, which has invented machines, is greater than any machine, and it is *mind* and *spirit* which ought to rule, for they are the things which lift man above the brute, the things which are godlike.

The rhythm of the poem is suggestive of the regular pulse of a machine, and it is especially marked in the refrain to the first stanza—

"We can pull and haul and push and lift and drive,
We can print and plough and weave and heat and light."

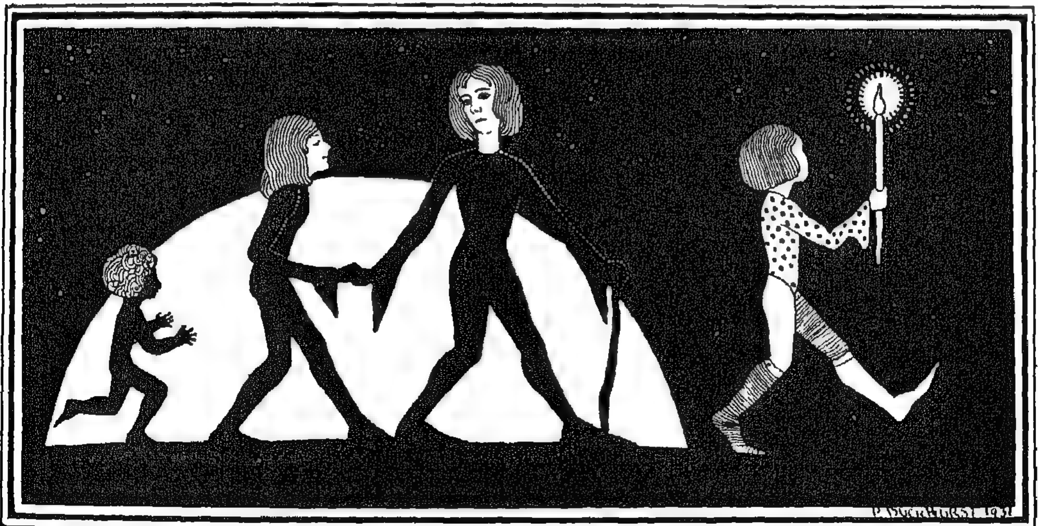
The metallic sound in some of the words, and the suggestion of ponderous size in the

phrases, also add to the wizardry of the poem. The machines are wrought, hammered, cut, filed and tooled; a liner is "a monstrous nine-decked city", and we read of "the never-failing cistern of the snows," and "iron-shouldered rocks". Notice that the impression of vastness is conveyed partly by the use of hyphened words, and partly by the play of the poet's imagination, for these three phrases are all figures of speech, the first two being metaphors and the third personification. In the last stanza the great size of the machines is shown in vivid contrast to the height of man, who, like a fly, "crawls" beneath their rods, and is slain if he should make "a slip in handling" them. Yet, as they confess at last, they are not gods—

"Because, for all our power and weight and size,
We are nothing more than children of your brain!"

What do the machines appear to be in the poem? From what are they made? With what food must they be fed? What machines do you know that are referred to in the four lines beginning—"We can pull"? Write out metaphors from the poem. How are the machines used to "plant a barren wilderness with wheat"? Quote lines from the poem which illustrate the mightiness of the machines. What is "the Law" by which the machines live? What is "the secret of the machines"? Why should they never be worshipped as gods? Write the name of the poet who composed this poem.

FANCY



"Ever let the Fancy roam,
Pleasure never is at home:
At a touch sweet Pleasure melteth,
Like to bubbles when rain pelteth,
Then let wingèd Fancy wander
Through the thought still spread beyond her.
Open wide the mind's cage-door,
She'll dart forth, and cloudward soar
O sweet Fancy! Let her loose."—*Keats.*

Fancy, like the wind, demands "all the world" to wander in, and not satisfied with earth only, ventures into Fairyland as well Poets often appear to live much of their lives in the realms of Fancy, and their fanciful thoughts, like those of children, are so *real* to them that we sometimes wonder whether their poems are fanciful or real. Their imagination plays alike around scenes of past history and the events of ordinary everyday life, as we shall see when we read the poems following

16. The Shadow People

Old lame Bridget doesn't hear
Fairy music in the grass
When the gloaming's on the mere
And the shadow people pass
Never hears their slow grey feet
Coming from the village street
Just beyond the parson's wall,
Where the clover globes are sweet
And the mushroom's parasol
Opens in the moonlit rain.
Every night I hear them call
From their long and merry train.
Old lame Bridget says to me,
"It is just your fancy, child"
She cannot believe I see
Laughing faces in the wild,
Hands that twinkle in the sedge
Bowing at the water's edge
Where the finny minnows quiver,
Shaping on a blue wave's ledge
Bubble foam to sail the river.
And the sunny hands to me
Beckon ever, beckon ever
Oh! I would be wild and free
And with the shadow people be

Francis Ledwidge.

Note—This tuneful poem describes the vivid fancies of a child who sees "shadow people" wherever he goes. At evening time he hears their "slow grey feet" moving towards the meadows, and at night in the midst of their revels they call to him. When he is out "in the wild" he sometimes catches sight of their laughing faces, and sees their white hands beckoning to him from the sedge along the river banks. He envies the shadow people their freedom, and longs to go and live with them.

The "fairy" music of this poem is slow and dreamy, and consequently the recitation of the words should not be hurried Dwell especially upon the phrase "their slow grey feet." Let the children repeat the following phrases, closing their eyes in order the better to hear the music and see the delicate pictures that the words suggest—"the gloaming's on the mere," "the clover globes are sweet," "the moonlit rain," "the finny minnows quiver."

The "mushroom's parasol" is a dainty metaphor in which a comparison is implied between a mushroom and a sunshade. The figure of "old lame Bridget," heavy and matter-of-fact, serves to enhance by contrast the airy grace of the shadow people Here and there in the poem are suggestions of colour and sparkle—"hands that twinkle," "a blue wave's ledge," "slow grey feet," "moonlit rain," "sunny hands." Notice the repetition which marks the insistence of the shadow people's call—

" And the sunny hands to me
Beckon ever, beckon ever."

The rhyme scheme is irregular, and this helps to make the music sound "free," as we should expect to hear it coming from the wild river sedges and the grass.

You may like to know that this poem, among others, was written by an Irish poet, Francis Ledwidge, while he was in hospital in Egypt during the First World War. He has sweet memories of the countryside in his beautiful native land, and he sees again the fairies, the village street, the laughing faces, the river, and other well-remembered scenes. Francis Ledwidge was killed in the War.

Why was Bridget unable to hear the fairy music? Describe the village in your

own words. What other names do you know for the shadow people? Explain "mushroom's parasol"; "finny minnows quiver." What fairy sights and sounds did the child see and hear? What did he wish? Describe the river as he saw it. Write lines from the poem that suggest colour to you. What kind of music do you think the "fairy music" was? What can you find suggestive of it in the poem? Do you like the child in the poem? Give reasons for your answer.

17. Berries

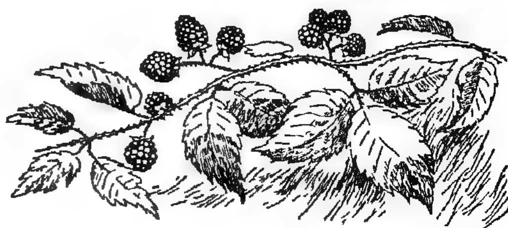
There was an old woman
  Went blackberry picking
Along the hedges
  From Weep to Wicking.
Half a pottle—
  No more she had got,
When out steps a Fairy
  From her green grot,
And says, "Well, Jill,
  Would 'ee pick 'ee mo?"
And Jill, she curtseys,
  And looks just so.
"Be off," says the Fairy,
  "As quick as you can,
Over the meadows
  To the little green lane,
That dips to the hayfields
  Of Farmer Grimes
I've berried those hedges
  A score of times,
Bushel on bushel
  I'll promise 'ee, Jill,
This side of supper
  If 'ee pick with a will."
She glints very bright,
  And speaks her fair;
Then lo, and behold!
  She has faded in air.

Be sure old Goodie
  She trots betimes
Over the meadows
  To Farmer Grimes.
And never was queen
  With jewellery rich
As those same hedges
  From twig to ditch;
Like Dutchmen's coffers,
  Fruit, thorn, and flower—
They shone like William
  And Mary's bower.
And be sure old Goodie
  Went back to Weep,
So tired with her basket
  She scarce could creep

When she comes in the dusk
  To her cottage door,
There's Towser wagging
  As never before,
To see his Missus
  So glad to be
Come from her fruit-picking
  Back to he.
As soon as next morning
  Dawn was grey,
The pot on the hob
  Was simmering away;
And all in a stew
  And a hugger-mugger
Towser and Jill
  A-boiling of sugar,
And the dark clear fruit
  That from Faerie came,
For syrup and jelly
  And blackberry jam.

Twelve jolly gallipots
  Jill put by,
And one little teeny one,
  One inch high;
And that she's hidden
  A good thumb deep,
Half way over
  From Wicking to Weep.

Walter de la Mare.



Note—This jolly poem by Mr Walter de la Mare relates how the fairies helped an old woman to find the best blackberries The story is told so cleverly that it seems *real.* The Fairy speaks in the country-woman's own language—"Well, Jill, would 'ee pick 'ee mo?" Jill curtseys and by her looks signifies an answer in the affirmative She takes the Fairy so entirely for granted that we get the impression that a meeting with a fairy is quite an ordinary occurrence Of course she acts at once upon the advice given her and is rewarded with a magnificent picking of berries Then we have the homely touch of Towser's evening welcome, his tail "wagging as never before to see his Missus" Jill is a busy woman making jam and jelly on the next day, and does not forget to show her gratitude to the Little People afterwards

The joyous lilt of the poem is partly produced by the arrangement in each line of two strong stresses only:

"There wás an old wóman
Went bláckberry pícking"

This short, quick movement helps to give the impression of the old woman hurrying along as quickly as she can The pictures portrayed are both delightful and humorous Jill herself is an amusing little figure, especially in the third stanza, where the poet speaks of her as "old Goodie" who "trots betimes over the meadows." The picture of the Fairy is daintily ethereal—"She glints very bright", then "has faded in air." She is realistic, too, for she tells Jill—"I've berried those hedges a score of times" All the pictures suggested to us have colour and sparkle in them, for example—"green grot," "green lane," "glints," "shone," "dawn was grey," "dark clear fruit"

The third stanza is rich in similes. Note the expressive words used in the description of the jam making—"simmering," "hugger-mugger"—and the humour in the lines "One little teeny one" and "A good thumb deep" The names Wicking and Weep are musical.

The pupils will greatly enjoy reading and learning this poem They should put into it as much expression as they can, treating it as a story to be told to the class The Fairy's words should be quick and energetic but not too loud, for a being whose jam pots are only one inch high would not have an enormous voice. Say very slowly and wearily the lines—

"So tired with her basket
She scarce could creep."

A "pottle" is a small round or square chip basket for strawberries and other fruit A "gallipot" is an earthen jam jar A "hugger-mugger" is the confusion or muddle of excitement. "Back to *he*" is a bit of West Country dialect "Faerie" is the kingdom of the fairies William III, the husband of Queen Mary, was a Dutchman

Briefly relate the story of this poem. Which incidents seem real and which seem fanciful? Quote lines from the poem which should be said (*a*) quickly (*b*) slowly How do you know that the Fairy was tiny? With what things are the loaded blackberry hedges compared? Describe what you would draw if you were making a picture of the poem Talk about the music of the poem. What does it suggest to you? Write down from the poem some lines which are amusing. Why did the old woman hide a teeny gallipot? Quote lines written in the West Country dialect. Describe Jill's return to Towser.

18. The Temptation of Saint Anthony

Goblins came, on mischief bent,
To Saint Anthony in Lent.

"Come, ye goblins, small and big,
We will kill the hermit's pig.

"While the good monk minds his book
We the hams will cure and cook.

"While he goes down on his knees
We will fry the sausages.

"While he on his breast doth beat
We will grill the tender feet.

"While he David's Psalms doth sing
We will all to table bring"

On his knees went Anthony
To those imps of Barbary.

"Good, kind goblins, spare his life,
He to me is child and wife

"He indeed is good and mild
As 'twere any chrisom child

"He is my felicity,
Spare, oh, spare my pig to me!"

But the pig they did not spare,
Did not heed the hermit's prayer

They the hams did cure and cook,
Still the good Saint read his book

When they fried the sausages
Still he rose not from his knees

When they grilled the tender feet
He ceased not his breast to beat.

They did all to table bring,
He for grace the Psalms did sing.

All at once the morning broke,
From his dream the monk awoke.

There in the kind light of day
Was the little pig at play.

Richard L. Gales



Note—The Temptation of Saint Anthony is from an old French ballad—one of the song-ballads Notice that the poem is written in couplets, that is in pairs of lines which rhyme, and notice, too, how the English translation makes "sausages" rhyme with "knees."

Saint Anthony was a hermit—a holy man living in solitude—and he dearly loved his little pig because it was the only living thing that he possessed During the season of Lent the saint's faith required that he should fast, and devote a large part of his time to prayer, reading from a holy book and singing the Psalms of David The wicked goblins tried to keep him from his devotions by killing his beloved pig, but though Saint Anthony was in great distress, he put his duty to God first, and set aside his own feelings. His reward came with the morning light, when he woke and found that the sacrifice of his pig had been only a dream·

"There in the kind light of day
Was the little pig at play."

The arrangement and wording of the poem are suggestive of olden days. Note, for example, such terms as the following—"ye goblins," "doth beat," "doth sing," "chrisom child," "my felicity," "did cure," "rose not," "ceased not." By using such expressions the poet has introduced an old-world atmosphere into his poem The story is told in a simple way, suited to the kind and simple nature of the good monk; but the words, though plain, are vivid and well-chosen, making us realise the saint's deep distress.

"Good, kind goblins, spare his life,
He to me is child and wife."

The repetition of the first words of the lines impresses on the mind a sense of the goblins' impish malice, and also makes the music more haunting

When the poem is recited encourage a mischievous tone, gradually increasing in

strength, during the first six stanzas. Saint Anthony's words should sound imploring, and each line of the later stanzas should be distinct in expression, the first spiteful and the second calm and sad.

A "chrisom" child is an innocent babe recently baptised.

Briefly relate the story of this poem. What was the "temptation" of the saint? What was the saint's reward? Why was he so fond of his pig? How did he describe the pig? How did Saint Anthony spend most of his time? From the poem write expressions that are not modern. Write the first three stanzas showing the stressed syllables. Add a second line to each of the following, taking for your pattern the rhythm and rhyme-scheme of the poem—(*a*) When I am on holiday—(*b*) Where the river ripples by—(*c*) In the meadows fresh and green—(*d*) On my homeward way I sing——

(There is an illustration of a pig on page 213.)

JOHN CLARE—A PEASANT POET

The next group of poems was written by a poor countryman named John Clare, and shows that good poetry can be written even by those who have to fight all their lives against great hardships. John Clare's father was a farm labourer who could not earn enough money to keep his family, and who had to ask for help from the parish. John was always a weakly child. For a very short time he went to an infant school, and then, before he was seven years old, he tended the sheep and geese on the common at Helpstone, the village where he was born. His companion was the old village cowherd who was known as "Granny," and from him John learned many old songs.

Before John Clare was twelve he went to work as a thresher, and in the winter evenings attended an evening school four or five miles away from his home. About this time John bought a book of poetry called *The Seasons*, by James Thomson.

Whenever he had any time to spare, he would be either reading *The Seasons* or trying to write verses of his own. His life was very adventurous. Once he enlisted in the militia, once he joined a band of gypsies, at length he obtained employment at a limekiln, his wages being nine shillings a week.

In 1821, with the help of some friends, a volume of his poems was published. It was called: *Poems, descriptive of Rural Life and Scenery, By John Clare, a Northamptonshire Peasant.* For a short time he became famous, and his friends raised for him a yearly income of £45. This was not sufficient to provide for the needs of himself and his family, however, and he had to continue working very hard.

At length his health broke down, and his mind began to weaken. He was put in charge of a doctor who had a house in Epping Forest, but one day he wandered away, and walked to his old home in Northamptonshire. He gradually became infirm in body and mind, and died quietly in May, 1864. The peasant poet was buried in his native village of Helpstone. His best work is *The Rural Muse*, published in 1835.

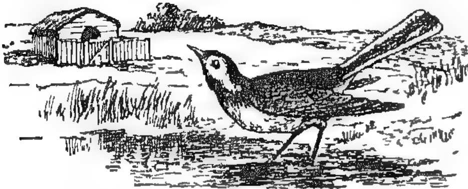
19 LITTLE TROTTY WAGTAIL

Little Trotty Wagtail, he went in the rain,
And twittering, tottering sideways, he ne'er got straight again;
He stooped to get a worm, and looked up to get a fly,
And then he flew away ere his feathers they were dry.

Little Trotty Wagtail, he waddled in the mud,
And left his little footmarks, trample where he would.
He waddled in the water-pudge, and waggle went his tail,
And chirrupt up his wings to dry upon the garden rail.

Little Trotty Wagtail, you nimble all about,
And in the dimpling water-pudge you waddle
  in and out,
Your home is nigh at hand, and in the warm
  pigsty,
So, little Master Wagtail, I'll bid you a good-
  bye.

John Clare.



Note.—John Clare's poetry is mainly about the things that he saw when he worked on the land. He must have loved and studied the birds, for he knew their habits well He describes how the wagtail runs in and out of rain puddles, looking for his food, and leaving "his little footmarks" everywhere Afterwards he flies on to a fence, and fluffs out his wings to dry At night he nests in "the warm pigsty."

The rhythm of this poem is suggestive of a little bird running about, and the alliterative words add to the flow of the lines—"He *w*addled in the *w*ater-pudge, and *w*aggle *w*ent his tail." Several words are cleverly chosen to suggest their meanings by their sounds—"Trotty," "twittering, tottering sideways," "chirrupt up his wings," "nimble all about" If you have ever watched rain-drops falling into a puddle you will realise the vividness of the phrase "dimpling water-pudge" The repetition of "little" impresses on us the delicate lightness of the bird

Why is this poem so named? Which do you think is the most pleasing word-picture of the wagtail in this poem? Describe the bird's habits. Write down phrases which show that a wagtail is not a large bird. Give an example of alliteration from the poem. What does the rhythm suggest to you? How can you tell from this poem that Clare loved birds? Describe in your own words the kind of district that you think a wagtail would like Tell a story of your own about a bird

20. The Thrush's Nest

Within a thick and spreading hawthorn bush
  That overhung a molehill large and round,
I heard from morn to morn a merry thrush
  Sing hymns to sunrise, and I drank the
    sound
With joy, and often, an intruding guest,
  I watched her secret toil from day to day—
How true she warped the moss, to form a nest,
  And modelled it within with wood and clay,
And by-and-by, like heath-bells gilt with dew,
  There lay her shining eggs, as bright as
    flowers,
Inkspotted-over shells of greeny blue;
  And there I witnessed in the sunny hours
A brood of Nature's minstrels chirp and fly,
Glad as the sunshine and the laughing sky.

John Clare.

Note—In this little poem Clare tells us exactly how the thrush builds her nest We can imagine him lovingly watching her day by day as she twists and twines the moss into shape and neatly finishes off the nest inside with clay. He then describes her eggs—"greeny-blue" and "inkspotted-over" —which at length hatch into "a brood of Nature's minstrels"

The Thrush's Nest is a sonnet, a special type of poem consisting of fourteen rhyming lines, with five strong beats in each A sonnet is a "little strain" about a single object or thought, and the first eight lines (the octave) generally differ from the last six (the sestet) in the order of rhymes and in expression The finest sonnets in our language have been written by Shakespeare, Milton and Wordsworth. "The Thrush's Nest" is written in the form of a Shakespearean sonnet, and rhymes *abab*, *cdcd*; *efef*, *gg* The octave describes the bird's nest, and the sestet tells us of the eggs and young birds.

We know that poets must love music because they are themselves musicians with

words and phrases, and Clare was attracted to the thrush first of all by her morning "hymns to sunrise." His picture of the hawthorn bush above the molehill is so clear that it seems to be actually drawn in front of our eyes instead of suggested to us. Notice the beautiful simile in which the eggs are compared to "heath-bells gilt with dew" "Heath-bells" or harebells are pale blue bell-flowers that grow wild on pasture and on heaths In the next line is another simile—"her shining eggs *as bright as flowers*", and "inkspotted-over shells" is a metaphor in which a comparison is implied between the marks on the eggshells and spots of ink In "Nature's minstrels" the birds are referred to as persons, a "minstrel" being a singer of the Middle Ages, and in the last line the sunshine and the sky are also imagined to be gay and happy persons

Can you describe the thrush's nest? Explain "intruding guest"; "inkspotted-over"; "Nature's minstrels" Which words tell of Clare's love for (*a*) the songs of birds (*b*) sunshine? How are the hawthorn bush and molehill described in the poem? Write out similes from the poem. What name is given to this type of poem? Tell all you know about its arrangement How would you know a thrush's eggs from those of any other bird? Quote the phrase which describes the thrush's song. If you were going to draw a picture from the poem, what would you put in it?

21 Autumn

I love the fitful gust that shakes
  The casement all the day,
And from the glossy elm-tree takes
  The faded leaves away,
Twirling them by the window pane
With thousand others down the lane

I love to see the shaking twig
  Dance till the shut of eve,
The sparrow on the cottage rig,
  Whose chirp would make believe
That Spring was just now flirting by
  In Summer's lap with flowers to lie.

I love to see the cottage smoke
  Curl upwards through the trees,
The pigeons nestled round the cote
  On November days like these·
The cock upon the dunghill crowing,
The mill sails on the heath a-going.

The feather from the raven's breast
  Falls on the stubble lea;
The acorns near the old crow's nest
  Drop pattering down the tree;
The grunting pigs, that wait for all,
Scramble and hurry where they fall.

John Clare.

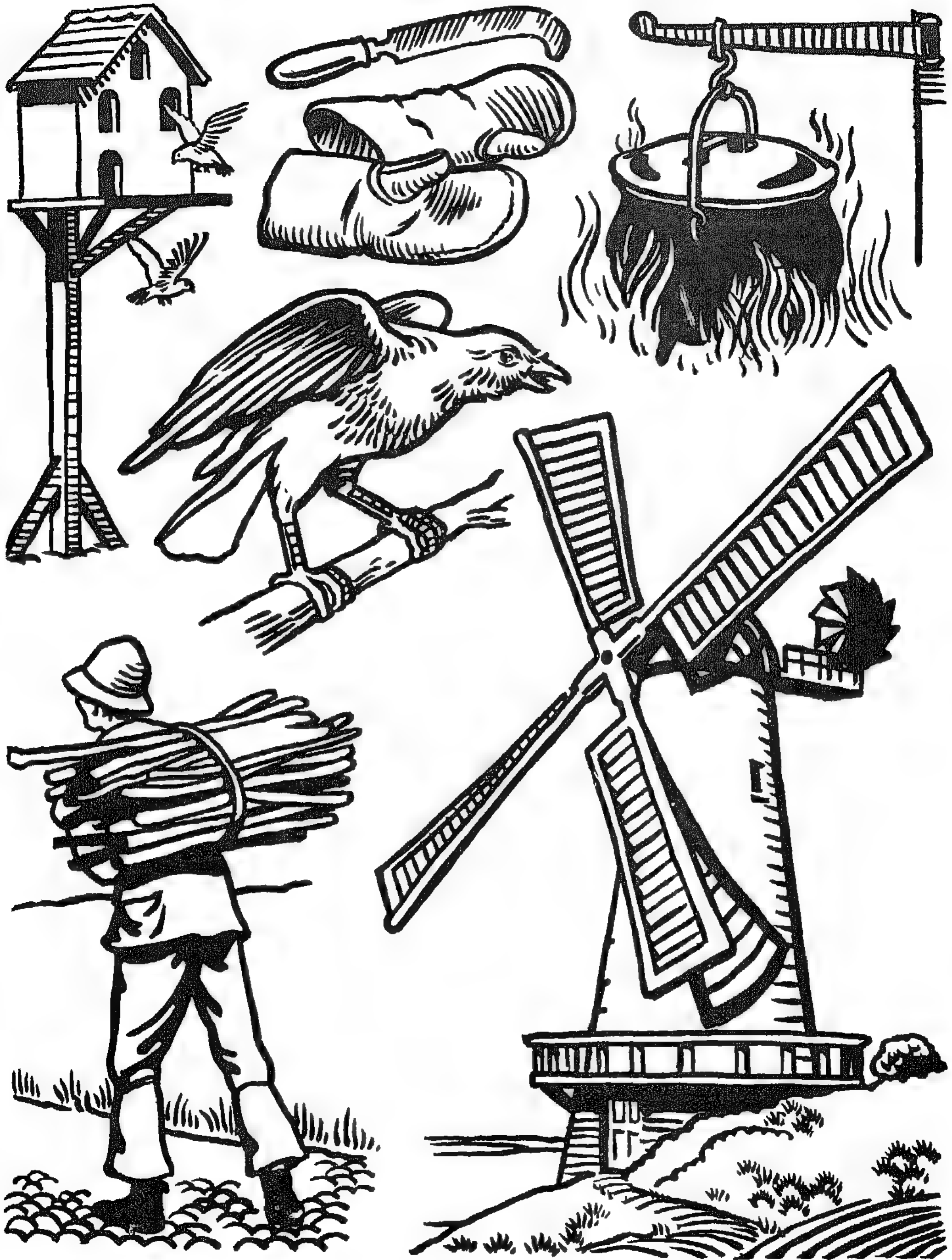
Note—In this poem are all the signs of the coming of autumn as noticed by the country boy year after year—the faded twirling leaves, the dancing twigs, the sparrows, the pigeons; the acorns and the pigs.

The music of the poem has a delightful dance in it which children find very attractive Many words and phrases suggest the breeziness of autumn—"fitful gust", "twirling", "shaking twig", "mill sails on the heath a-going" Others are chosen to suggest their meanings by their sounds, such as "pattering down", "grunting", "scramble and hurry" Spring is daintily described as a playful maiden "flirting" or flitting along to meet her lover, the summer. The "stubble lea" is the open field covered with stumps of corn left after reaping

How can you tell from this poem that Clare knew a great deal about the countryside? Describe the scene pictured in the third stanza Explain "fitful gust", "shut of eve"; "stubble lea" Write words from the poem which sound exactly as they mean What lines suggest the windiness of autumn? What does the poet say that he loves? Near what tree was "the old crow's nest"? What does Clare say about the elm-tree leaves? Tell about other signs of autumn that you have noticed yourself What does the music of the poem suggest to you?

(There are blackboard sketches of a pigeon cote, a raven and a windmill on page 235.)

SKETCHES FOR THE BLACKBOARD



Pigeon Cote, Raven and Windmill (Autumn)
Bill and Mittens, Pot on the Hook, Wood-Cutter with Faggots (The Wood-Cutter's Night Song)

22. THE WOOD-CUTTER'S NIGHT SONG

Welcome, red and roundy sun,
Dropping lowly in the west;
Now my hard day's work is done,
I'm as happy as the best

Joyful are the thoughts of home,
Now I'm ready for my chair,
So, till morrow-morning's come,
Bill and mittens, lie ye there!

Though to leave your pretty song,
Little birds, it gives me pain,
Yet to-morrow is not long,
Then I'm with you all again.

If I stop, and stand about,
Well I know how things will be,
Judy will be looking out
Every now-and-then for me.

So fare ye well! and hold your tongues,
Sing no more until I come;
They're not worthy of your songs
That never care to drop a crumb.

All day long I love the oaks,
But, at nights, yon little cot,
Where I see the chimney smokes,
Is by far the prettiest spot

Wife and children all are there,
To revive with pleasant looks,
Table ready set, and chair,
Supper hanging on the hooks

Soon as ever I get in,
Where my faggot down I fling,
Little prattlers they begin
Teasing me to talk and sing.

Welcome, red and roundy sun,
Dropping lowly in the west;
Now my hard day's work is done,
I'm as happy as the best.

Joyful are the thoughts of home,
Now I'm ready for my chair,
So, till morrow-morning's come,
Bill and mittens, lie ye there!

John Clare

Note.—Here the wood-cutter tells us how gladly he welcomes the setting sun, which is the signal for him to lay down his bill-hook and hedging gloves, and go home to his wife and children in their tiny cottage.

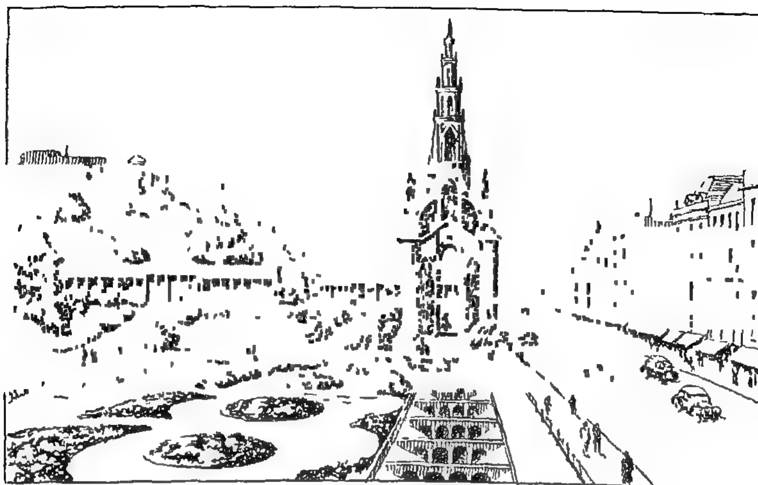
The music of the poem is sweet and soothing, suggestive of the rest to which the tired labourer is looking forward. Many alliterative phrases add to the smoothness of the verse—"*r*ed and *r*oundy sun"; "if I s*t*op and s*t*and about"; "supper *h*anging on the *h*ooks"; "where my *f*aggot down I *f*ling." The simple language of the poem is suited to the nature and speech of the honest wood-cutter, and in keeping with the pictures he describes to us. He speaks of the little birds' "pretty song"; his "little cot" with the "table ready set, and chair"; and his "little prattlers" teasing him "to talk and sing."

A wood-cutter uses a "bill," which is a cutting instrument something like a chopper, but having a hook-shaped point He wears leather gloves, or "mittens," to protect his hands from the thorns You can picture his supper (perhaps something boiling in a pot) "hanging on a hook" over the cottage fire.

Quote lines which show the wood-cutter's love for birds, his children; his home. Tell in your own words what kind of person you think the wood-cutter is How is the sun described in the poem? To what does the wood-cutter look forward at sunset? How do the children greet their father? Quote lines from the poem to show that the wood-cutter enjoys his days out of doors If you were going to draw some pictures from the poem, describe exactly what you would put in them. Using the same rhythm and rhyme scheme as those in this poem, write two stanzas of your own about the end of your day's schoolwork; begin—Home from school I wend my way—

(There are blackboard sketches of a bill and mittens, a pot on the hooks, and a wood-cutter with a bundle of faggots on page 235.)

SIR WALTER SCOTT



Halfway along Princes Street, in Edinburgh—one of the finest streets in the world—there is a striking monument which was erected in memory of Sir Walter Scott, the greatest of Scotland's writers. He was born in the city of Edinburgh in the year 1771. During his boyhood, Walter had trouble with his right leg, of which he lost the use for some years, and although its strength returned in response to treatment, he was lame all his life. In every other way he was a strong and healthy boy. He was not a brilliant scholar at the High School or at the university of Edinburgh, but he early developed a passion for reading both poetry and prose, and stored his mind with old legends and historical romances. Scott's father was a lawyer, and he wished his son to follow this profession also, so Walter studied for the Bar, and became an advocate when he was twenty-one years old. He was not a fluent speaker, however, and his mind was occupied with the study of Border ballads, which he gathered in his spare time from the folk of the Borderland.

In the year 1805 Scott published the *Lay of the Last Minstrel*, a long poem of more than two hundred stanzas, in which an aged minstrel relates in verse the story of the love of Lord Cranstoun for the Ladye Margaret of Branksome Hall, who is described as "the flower of Teviot."

Scott's poem begins in this way:

"The way was long, the wind was cold,
The Minstrel was infirm and old;
His wither'd cheek, and tresses gray,
Seem'd to have known a better day;
The harp, his sole remaining joy,
Was carried by an orphan boy
The last of all the Bards was he,
Who sung of Border chivalry,
For, welladay! their date was fled,
His tuneful brethren all were dead;
And he, neglected and oppress'd,
Wish'd to be with them, and at rest.
No more on prancing palfrey borne,
He caroll'd, light as lark at morn;
No longer courted and caress'd,
High placed in hall, a welcome guest,
He pour'd, to lord and lady gay,
The unpremeditated lay·
Old times were changed, old manners gone;
A stranger fill'd the Stuarts' throne;

The bigots of the iron time
Had call'd his harmless art a crime
A wandering Harper, scorn'd and poor,
He begg'd his bread from door to door,
And tuned, to please a peasant's ear,
The harp, a king had loved to hear."

Besides the story, the poem describes the manners, customs, scenery and warfare of the Borderland about the middle of the sixteenth century. There are many stirring stanzas with a delightful lilt, and the poem has a romantic old-world atmosphere Here is a fine picture of the knights who day and night guarded Branksome Hall·

" Nine-and-twenty knights of fame
Hung their shields in Branksome Hall,
Nine-and-twenty squires of name
Brought them their steeds to bower from stall;
Nine-and-twenty yeomen tall
Waited, duteous, on them all,
They were all knights of mettle true,
Kinsmen to the bold Buccleuch.

" Ten of them were sheathed in steel,
With belted sword, and spur on heel·
They quitted not their harness bright,
Neither by day, nor yet by night;
They lay down to rest,
With corslet laced,
Pillow'd on buckler cold and hard,
They carved at the meal
With gloves of steel,
And they drank the red wine through the helmet barr'd."

The *Lay of the Last Minstrel* brought Scott immediate and lasting fame The poem was extremely popular, and sold more rapidly than any poem had ever sold before. His next work was called *Marmion* It was even more popular than the other, and people could be heard saying lines to themselves as they walked along the streets of Edinburgh and London This is Scott's picture of the warrior, Marmion.

" Along the bridge Lord Marmion rode,
Proudly his red-roan charger trode,
His helm hung at the saddlebow,
Well by his visage you might know
He was a stalwart knight and keen,
And had in many a battle been;
The scar on his brown cheek reveal'd
A token true of Bosworth Field;
His eyebrow dark, and eye of fire,
Show'd spirit proud, and prompt to ire;
Yet lines of thought upon his cheek
Did deep design and counsel speak
His forehead, by his casque worn bare,
His thick moustache, and curly hair,
Coal-black, and grizzled here and there,
But more through toil than age;
His square-turn'd joints, and strength of limb,
Show'd him no carpet knight so trim,
But in close fight a champion grim,
In camps a leader sage "

In *Marmion* there is a fine description of the battle of Flodden Field, and the song *Lochinvar* in this section is taken from the same poem.

Later, Scott published *The Lady of the Lake*, a musical, picturesque poem, which made the Highlands of Scotland very popular as a holiday resort, for the Lake was Loch Katrine, set among the beautiful highland scenery of the Trossachs

" And thus an airy point he won,
Where, gleaming with the setting sun,
One burnish'd sheet of living gold,
Loch Katrine lay beneath him roll'd,
In all her length far winding lay,
With promontory, creek, and bay,
And islands that, empurpled bright,
Floated amid the livelier light,
And mountains, that like giants stand,
To sentinel enchanted land.
High on the south, huge Benvenue
Down on the lake in masses threw
Crags, knolls, and mounds, confusedly hurl'd,

The fragments of an earlier world,
A wildering forest feather'd o'er
His ruin'd sides and summit hoar,
While on the north, through middle air,
Ben-an heaved high his forehead bare."

In 1814 Scott published a novel called *Waverley*. As his name was not given, everybody wondered who the author could be People spoke of him as "The Great Unknown," for the novel was exceedingly popular. Scott afterwards wrote more than twenty novels, which are all called *The Waverley Novels*. Some of the most famous are *Ivanhoe*, *Kenilworth*, *The Talisman* and *Rob Roy*

Even in these novels are many poems, and when Scott required some verses for the head of a chapter and could not find a poem suitable, he would write one himself and call it *Old Ballad*.

Scott had built for himself a splendid house on the banks of the Tweed, but a printing and publishing firm in which he had become a partner failed, and he found that he owed many thousands of pounds. He



[*From the painting by Sir E. Landseer, R A*

SIR WALTER SCOTT

worked desperately hard day and night to pay off this debt, but broke down under the strain, and after a voyage to the Mediterranean he died at his home on the Tweed in 1832. He had been made a baronet in 1820.

Sir Walter Scott is one of the most admirable figures in English literature. His life was in many ways heroic, and he had a bold yet modest and generous spirit. He was a good poet, a great novelist, and a fine Christian gentleman.

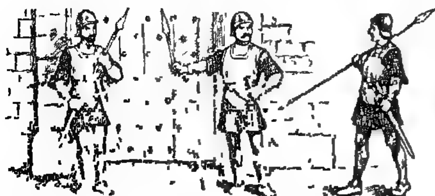
23. Lullaby of an Infant Chief

O, hush thee, my babie, thy sire was a knight,
Thy mother a lady, both lovely and bright,
The woods and the glens, from the towers which we see,
They all are belonging, dear babie, to thee.
O ho ro, i ri ri, cadul gu lo,
O ho ro, i ri ri, cadul gu lo.

O, fear not the bugle, though loudly it blows,
It calls but the warders that guard thy repose,
Their bows would be bended, their blades would be red,
Ere the step of a foeman draws near to thy bed
O ho ro, i ri ri, cadul gu lo,
O ho ro, i ri ri, cadul gu lo.

O, hush thee, my babie, the time soon will come,
When thy sleep shall be broken by trumpet and drum;
Then hush thee, my darling, take rest while you may,
For strife comes with manhood, and waking with day.
O ho ro, i ri ri, cadul gu lo,
O ho ro, i ri ri, cadul gu lo.

Sir Walter Scott



Note.—A Highland nurse sings this lullaby to her small charge She reminds him of his noble parents and of the stately heritage which is his He must not be alarmed at the sound of the bugle, for it is a note not of menace but of protection, summoning the guards to watch over his slumbers In a few years' time, the nurse sings, her babie will have grown into a warrior, and will not be able to enjoy a long sleep undisturbed—"So hush thee, my darling, take rest while you may." The refrain at the end of each stanza of the lullaby is in the language of the ancient people of Scotland:

"O ho ro, i ri ri, cadul gu lo,
O ho ro, i ri ri, cadul gu lo"

The poem has a gentle, swinging rhythm which resembles the rocking of a cradle It has been set to music, and the song is a favourite with children. The words of the poem are both musical and descriptive—"a lady, both lovely and bright"; "their *b*ows would *b*e *b*ended, their *b*lades would *b*e red." The use of "thee," "babie," "thy sire," "thy sléep," the old-time weapons of the warders and the suggestion of growing up to be a warrior, all introduce into the poem the atmosphere of bygone days.

Tell in a few words what the nurse sings to the child. Write one of the stanzas and mark the strongly accented syllables. What does the rhythm of the poem suggest to you? In what words does the nurse describe the child's mother and father? Explain the title of the poem. With what weapons are the warders armed? Why do you think the nurse told the babie that "strife comes with manhood"? Why should he not fear the sound of the bugle? Tell why you enjoy reading this poem

24. Hunting Song

Waken, lords and ladies gay,
On the mountain dawns the day,
All the jolly chase is here,
With hawk, and horse, and hunting-spear!

Hounds are in their couples yelling,
Hawks are whistling, horns are knelling.
Merrily, merrily, mingle they,
"Waken, lords and ladies gay."

Waken, lords and ladies gay,
The mist has left the mountain gray,
Springlets in the dawn are steaming,
Diamonds on the brake are gleaming:
And foresters have busy been,
To track the buck in thicket green,
Now we come to chant our lay,
"Waken, lords and ladies gay."

Waken, lords and ladies gay,
To the green-wood haste away,
We can show you where he lies,
Fleet of foot, and tall of size,
We can show the marks he made,
When 'gainst the oak his antlers fray'd,
You shall see him brought to bay,
"Waken, lords and ladies gay."

Louder, louder chant the lay,
Waken, lords and ladies gay!
Tell them youth, and mirth, and glee,
Run a course as well as we,
Time, stern huntsman! who can baulk?
Staunch as hound, and fleet as hawk,
Think of this, and rise with day,
Gentle lords and ladies gay.

Sir Walter Scott.

Note.—This poem has a fine lilt which suggests the excitement of the hunt, and many onomatopoetic words add to the vividness of the description—"yelling," "whistling," "knelling" A beautiful picture of daybreak on the mountain-side is portrayed—

"The mist has left the mountain gray,
Springlets in the dawn are steaming,
Diamonds on the brake are gleaming."

The petition of "Waken, lords and ladies gay" at the beginning and end of nearly every stanza adds to the song-effect, and also impresses on the mind the keynote of the poem—a call to be "up and doing" while life is in its heyday

There are some good examples of alliteration—"with *h*awk, and *h*orse, and *h*unting spear"; "*m*errily, *m*errily, *m*ingle they". Sometimes a sound in the middle of a word is repeated—"to the green-*w*ood haste a*w*ay" In the last stanza, Time is personified, and compared in two similes to a hound and hawk The poem should be recited with vigour and enthusiasm, as much as possible being made of the strong stresses in the rhythm

"Hawks" were trained in olden times for catching birds, the sport was called "hawking." A "buck" is a male deer, the female is called a "roe", the "antlers" are the horns. The buck rubs his horns on a tree as a cow rubs her horns on a gate The lords and ladies of the chase are told to hurry, for "Time" is like a huntsman with their "youth and mirth and glee" for his prey, so they had better be rising at once

At what time of the day would you see "diamonds" on bracken, or ferns? What noise is made by hunting dogs? by hawks? by horns? How does the poet describe the deer? What is said of the mountain slopes in the early morning? Quote examples of alliteration from this poem. Why is it called *Hunting Song*?

Explain—

"Time, stern huntsman! who can baulk?
Staunch as hound, and fleet as hawk."

Write as many reasons as you can find why the lords and ladies were called upon to "waken" What makes the poem so stirring and lively? (There is an illustration of a hooded hawk on page 251)

25. Lochinvar

O, young Lochinvar is come out of the west,
Through all the wide border his steed was the best;
And save his good broadsword, he weapons had none,

He rode all unarm'd, and he rode all alone.
So faithful in love, and so dauntless in war,
There never was knight like the young Lochinvar

He staid not for brake, and he stopp'd not for stone,
He swam the Eske river where ford there was none;
But ere he alighted at Netherby gate,
The bride had consented, the gallant came late;
For a laggard in love, and a dastard in war,
Was to wed the fair Ellen of brave Lochinvar

So boldly he enter'd the Netherby Hall,
Among bride's-men and kinsmen, and brothers, and all
Then spoke the bride's father, his hand on his sword,
(For the poor craven bridegroom said never a word,)
"O come ye in peace here, or come ye in war,
Or to dance at our bridal, young Lord Lochinvar?"—

"I long woo'd your daughter, my suit you denied,—
Love swells like the Solway, but ebbs like its tide—
And now am I come, with this lost love of mine,
To lead but one measure, drink one cup of wine.
There are maidens in Scotland more lovely by far,
That would gladly be bride to the young Lochinvar"

The bride kiss'd the goblet· the knight took it up,
He quaff'd off the wine, and he threw down the cup
She look'd down to blush, and she look'd up to sigh,
With a smile on her lips, and a tear in her eye.
He took her soft hand, ere her mother could bar,—
"Now tread we a measure!" said young Lochinvar.

So stately his form, and so lovely her face,
That never a hall such a galliard did grace:
While her mother did fret, and her father did fume,
And the bridegroom stood dangling his bonnet and plume,
And the bride-maidens whisper'd, "'Twere better by far,
To have match'd our fair cousin with young Lochinvar."

One touch to her hand, and one word in her ear,
When they reach'd the hall-door, and the charger stood near;
So light to the croupe the fair lady he swung,
So light to the saddle before her he sprung!
"She is won! we are gone, over bank, bush, and scaur;
They'll have fleet steeds that follow," quoth young Lochinvar

There was mounting 'mong Graemes of the Netherby clan,
Forsters, Fenwicks, and Musgraves, they rode and they ran:
There was racing and chasing, on Cannobie Lee,
But the lost bride of Netherby ne'er did they see
So daring in love, and so dauntless in war,
Have ye e'er heard of gallant like young Lochinvar?

Sir Walter Scott.

Note.—Lochinvar was a gallant Scottish knight who loved fair Ellen Graeme of the Netherby clan When he heard that she was to be wedded to another, he galloped furiously across part of southern Scotland to her home, swimming the river Eske when he could find no ford over it. For all his haste he arrived only in time to find the clan assembled for the wedding, so he marched boldly in amongst the guests, and when challenged by her father, protested that he cared no longer for Ellen, but had come merely to drink to her happiness and enjoy a last dance with her. The bridegroom

was a "poor craven" who shrank in fear from his rival Lochinvar drank to the bride and then began to dance with her. When they drew near the door, he whisked her outside and on to his horse, leaped to the saddle himself, and away they galloped so swiftly that none ever discovered whither they had gone

This stirring Border romance is sung in verse, the music of which gallops along to keep pace with Lochinvar's steed The poem makes a fine recitation and is a favourite with children Let the pupils recite it as dramatically as they can, and try to show, by changes of tone, contempt for the bridegroom, anger in the father's words, regret in the bridesmaids' whispers, and triumph and helter-skelter at the end

The language of the poem is bold and outspoken like its hero The bridegroom is openly pronounced "a laggard in love and a dastard in war"; the bride's father spoke "with his hand on his sword", Lochinvar "quaff'd off the wine, and he threw down the cup"—

"So daring in love, and so dauntless in war,
Have ye e'er heard of gallant like young
Lochinvar?"

In the fourth stanza is a fine simile, appropriately spoken by a Border knight—"Love swells like the Solway, but ebbs like its tide" Note the repetition of "young Lochinvar" at the end of each stanza This is a sort of refrain which helps to bind the story together A "galliard" was a lively French dance, a "scaur" (pronounced scar) is a steep face of rock

Tell in a few words the story of Lochinvar What examples are there of Lochinvar's boldness? What pleasing pictures are there in the poem? Quote any two lines that convey a vivid impression of the rise and fall of a rider on his horse. Explain the following—(*a*) "Never a hall such a galliard did grace." (*b*) "Love swells like the Solway, but ebbs like its tide" Write lines from the poem describing Ellen Graeme. How does the poet describe Lochinvar? What references are there in the poem to the Scottish Border? What can you tell about the river Eske? Why do you enjoy reading this poem?

WILLIAM WORDSWORTH

One of the greatest of our English poets was William Wordsworth. Poetry is the most perfect speech of man, and we are proud to feel that such men as Shakespeare, Milton, Wordsworth, Coleridge, Keats, Shelley, Tennyson, and others who had this wonderful gift of poetry were Englishmen

Wordsworth was born at Cockermouth in Cumberland in 1770, and he went to school at a small town called Hawkshead The boys did not board at the school, but in the cottages of village dames, so that after lessons were over they did much as they liked

William used to wander about in the moonlight, or in the dark over the hills He enjoyed rowing across the lake, and he was keenly interested in all he saw around him—hills and valleys, green fields and woods, lakes and streams, flowers, birds and butterflies Many of his shorter poems are about the common plants and animals that he saw and loved Among these are *To a Butterfly*; *The Sparrow's Nest*, *The Redbreast chasing the Butterfly*, *The Cock is Crowing*, *To the Daisy*, *To the Small Celandine*, *The Green Linnet*, *To a Sky-Lark*, *To the Cuckoo*; *The Primrose of the Rock* and *Daffodils* How lovingly he talks of that little spring flower, the Small Celandine.

"Pansies, Lilies, Kingcups, Daisies,
Let them live upon their praises;
Long as there's a sun that sets,
Primroses will have their glory;
Long as there are Violets,
They will have a place in story·
There's a flower that shall be mine,
'Tis the little Celandine"



[*From the steel engraving by G J Stodart*

WILLIAM WORDSWORTH

At the end of the poem he says·

" I will sing, as doth behove,
Hymns in praise of what I love!"

Wordsworth went later to St. John's College, Cambridge, and afterwards spent some time in France to continue his education, and broaden his mind by travel An account of the impressions he received during his travels is given in his autobiographical poem *The Prelude*.

Soon after his return from France, an old friend of his died and left him £900. With this money he and his sister Dorothy set up housekeeping together in Dorsetshire. She was a loving sister who helped him much with his poetry, and their companionship is "one of the pleasantest chapters in literary friendships." He writes very sweetly of her (as Emmeline) in the poem entitled *The Sparrow's Nest*, included in this section.

In 1797, Wordsworth became friendly with S. T. Coleridge, who was also to become a great poet. For a year these two young men saw each other almost every day They took long walks together, discussed poetry, and finally published a volume of poems called *Lyrical Ballads*. In these poems they both tried to show that commonplace objects, treated imaginatively, could inspire men to good poetry The sales of the book were so small, however, that Wordsworth said that he knew not for how many years his poetry had never brought him in enough to buy his shoe-strings.

In 1799, William and Dorothy settled down at Dove Cottage, Grasmere, where they lived together in the simplest way, doing all the housework themselves When William married in 1802, his wife joined them, and they went on living together in the same way.

Ten years later they went to Rydal Mount, a beautiful little house near Rydal Water in the Lake District Wordsworth was now, at long last, in a very comfortable position, for people had at length realised that he was a great poet In 1843 he was made Poet Laureate He lived to the age of eighty, and was buried in the tiny churchyard at Grasmere, near the pleasant stream Rotha, whose music he had loved so well.

Much of Wordsworth's verse is worthless, but in works such as the *Ode to Duty* and the *Intimations of Immortality* his poetry is perfect, and gives him an assured place among the greatest of English poets As a writer of sonnets he has rarely been equalled.

26. The Sparrow's Nest

Behold, within the leafy shade,
Those bright blue eggs together laid!
On me the chance-discovered sight
Gleamed like a vision of delight.
I started—seeming to espy
The home and sheltered bed,
The Sparrow's dwelling, which, hard by
My Father's house, in wet or dry
My Sister Emmeline and I
Together visited.

She looked at it as if she feared it;
Still wishing, dreading, to be near it
Such heart was in her, being then
A little Prattler among men
The Blessing of my later years
Was with me when a Boy:
She gave me eyes, she gave me ears,
And humble cares, and delicate fears;
A heart, the fountain of sweet tears,
And love, and thought, and joy

William Wordsworth

Note—Wordsworth tells in this poem of his boyish delight when one day, being attracted by something gleaming amidst the dark shade of leaves, he discovered a sparrow's nest containing eggs. He fetched his little sister Emmeline to see it, and was touched by her reverent regard for this miracle of nature, which they afterwards looked at together every day. The poet ends by saying how much he owed to the dear little girl whose overflowing interest in and affection for all things in nature stimulated his own observation and feelings

The words of the poem are simple, but much thought underlies them. The music is sweet and gentle, the short lines in the middle and at the end of each stanza prevent monotony. Let the pupils repeat the following phrases, trying to bring out their beauty —"within the leafy shade", "a vision of delight", "the fountain of sweet tears" Draw their attention also to the rhyme scheme, which is unusual. When reciting the poem, the speaker should try to put himself in the poet's place; then he will be able to convey to his listeners the delighted surprise of the first stanza and the tenderness of the second

Quote the lines in this poem that show Wordsworth's gratitude to a loving sister. How are the sparrow's eggs described? What did Emmeline think of the nest and eggs? In your own words describe Emmeline as you think she was at that time What did Wordsworth mean when he said, "She gave me eyes, she gave me ears"? Explain these lines—

> "The Blessing of my later years
> Was with me when a Boy."

How do you know that Wordsworth had a gentle heart? Write out the rhyme schemes of the stanzas Tell a story of your own about a brother and sister.

27 Lines Written in March

The cock is crowing,
The stream is flowing,

The small birds twitter,
The lake doth glitter,
The green field sleeps in the sun,
The oldest and youngest
Are at work with the strongest,
The cattle are grazing,
Their heads never raising,
There are forty feeding like one!

Like an army defeated
The Snow hath retreated,
And now doth fare ill
On the top of the bare hill,
The Ploughboy is whooping—anon—anon:
There's joy in the mountains,
There's life in the fountains,
Small clouds are sailing,
Blue sky prevailing,
The rain is over and gone!

William Wordsworth



Note—The spirit of spring is in these *Lines Written in March*, and a wealth of observation is expressed in musical words. There are only two strongly accented stresses in most of the lines.

"The cóck is crówing,
The stréam is flowing"

This arrangement helps to make the easy swinging movement of the poem. If you have ever watched cattle feeding in a meadow you will appreciate the accuracy of the description·

"The cattle are grazing,
Their heads never raising;
There are forty feeding like one!"

As well as in the lively rhythm, the stir of spring can be felt in many of the words—"crowing," "flowing," "grazing," "whooping," "sailing" Everyone is eager to shake off the lethargy of winter—

"The oldest and youngest
Are at work with the strongest"

There is also a note of gladness in "The rain is over and gone!" In two short lines we have a perfect picture of the sky in breezy March—

"Small clouds are sailing,
Blue sky prevailing."

Note the fine simile at the beginning of the second stanza—"*Like an army defeated* the Snow hath retreated."

Although the poem as a whole should be recited quickly and with vigour, the varying descriptions call for individual modulations in tone, in order to bring out their full meaning and beauty of sound For instance, the lively rendering of the first four lines should be slowed down and subdued at "The green field sleeps in the sun"; and the second stanza beginning with the story of the retreat of the snow should gradually increase in pace and exhilaration to the triumphant exclamation of the last line The rhythm should be marked throughout the poem.

Make a list of all that the poet noticed on a March day. What does the rhythm of the poem suggest to you? Quote lines which convey a sense of the vigorous life of March If you were going to illustrate the poem describe exactly what you would draw. Write a simile from the poem and explain

it in your own words. What do you think the poet meant by saying "There's joy in the mountains"? How did the March sunshine affect the country people? Write a short account of a March day and try to make it as lively and cheerful as this poem.

28 The Daffodils

I wandered lonely as a Cloud
That floats on high o'er vales and hills,
When all at once I saw a crowd,
A host of golden Daffodils;
Beside the Lake, beneath the trees,
Fluttering and dancing in the breeze

Continuous as the stars that shine
And twinkle on the milky way,
They stretched in never-ending line
Along the margin of a bay:
Ten thousand saw I at a glance,
Tossing their heads in sprightly dance.

The waves beside them danced, but they
Out-did the sparkling waves in glee:—
A poet could not but be gay,
In such a jocund company,
I gazed—and gazed—but little thought
What wealth the show to me had brought·

For oft, when on my couch I lie
In vacant or in pensive mood,
They flash upon that inward eye
Which is the bliss of solitude,
And then my heart with pleasure fills,
And dances with the Daffodils

William Wordsworth.

Note—This is *great* poetry, it has music, pictures, feeling, thought. *Music* and *pictures* are blended in—

"golden Daffodils,
Beside the Lake, beneath the trees,
Fluttering and dancing in the breeze."

Here is an expression of *feeling*—

"A poet could not but be gay,
In such a jocund company"—

and it is a fine *thought*, that to "gaze" upon beautiful sights is to store up beautiful images in the mind—

"They flash upon that inward eye"

In this poem Wordsworth expresses his deep spiritual sympathy with nature, and his sense of the "divine significance of ordinary things." In the midst of his loneliness he finds comfort and exaltation in the "jocund company" of "golden Daffodils," and many times afterwards when their picture recalls itself to his imagination—"that inward eye which is the bliss of solitude"—his spirit is revived by their message of gaiety and happiness

There are two delightful similes in the poem, one in which he compares his solitary self to "a Cloud that floats on high o'er vales and hills" and the other likening the daffodils to "the stars that shine and twinkle on the milky way" The "milky way" is the name given to a continuous band of stars that twinkle in thousands across the sky. The poem has a graceful, dreamy rhythm in keeping with the mood of the poet, and should be said slowly and smoothly, with light stresses upon descriptive words such as "fluttering," "dancing," "tossing," "sparkling."

Describe the scene which is pictured in this poem Why did the poet call the daffodils "a jocund company"? What wealth did the show bring to him? What words in the poem suggest that the flowers were full of "glee"? What is said about the waves in the bay? Quote similes from the poem and explain them in your own words. What does the poem tell us about Wordsworth? Give in your own words the message of the flowers. Make a picture of the daffodils and colour it.

29 A Spring Morning

There was a roaring in the wind all night;
The rain came heavily and fell in floods
But now the sun is rising calm and bright,
The birds are singing in the distant woods,
Over his own sweet voice the stockdove broods,
The jay makes answer as the magpie chatters,
And all the air is filled with pleasant noise of waters.

All things that love the sun are out of doors,
The sky rejoices in the morning's birth,
The grass is bright with raindrops,—on the moors
The hare is running races in her mirth;
And with her feet she from the plashy earth
Raises a mist, that, glittering in the sun,
Runs with her all the way, wherever she doth run

William Wordsworth

Note—In this beautiful little poem are examples of Wordsworth's careful observation of the smallest details of nature. He describes the birds answering each other's calls in the woods at sunrise, the music of running streams, the glitter of wet grass in the sunshine and the gambols of the hare upon the moor Let the pupils repeat these phrases, trying to bring out their meanings in their sounds—"a roaring in the wind", "fell in floods", "calm and bright", "the stockdove broods", "the magpie chatters"; "pleasant noise of waters"; "the plashy earth"

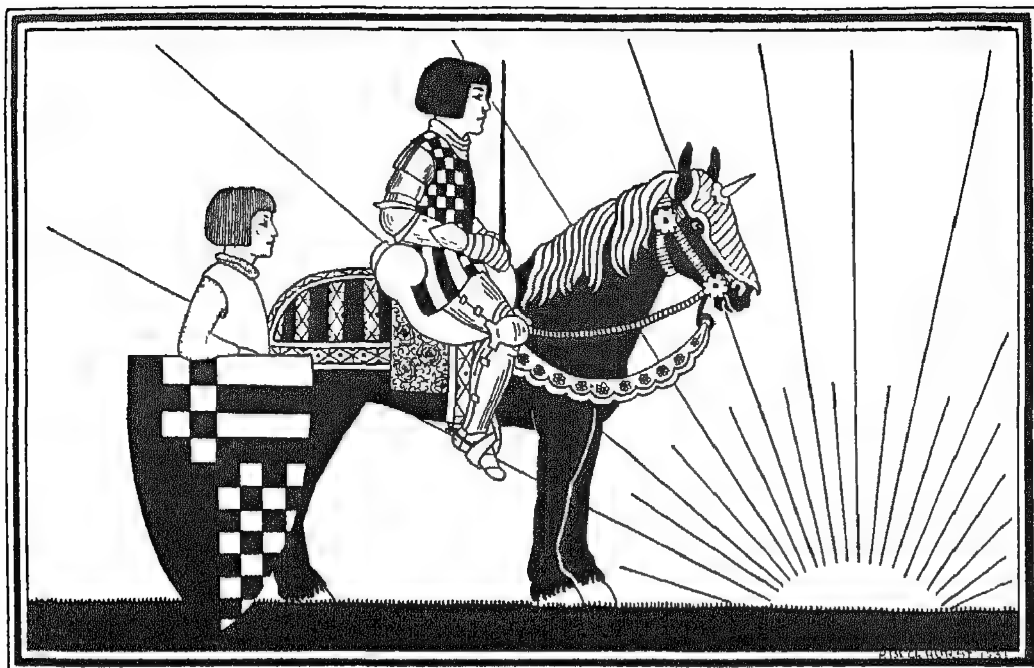
When describing *A Spring Morning* the poet sings first of the sounds of nature that greet his ear after the cessation of the night's wind and rain, and then of the gladdening influence of the sunshine—"the sky rejoices"; "the grass is bright", "the hare is running races in her mirth", "mist . . . glittering in the sun."

Notice that the last line of each stanza is longer than the rest It has *six* stresses, whilst the others have *five*, so the stanzas resemble a train that moves more slowly before it comes to a standstill in the station. The poem makes a delightful recitation, and gives an intelligent child scope for individual interpretation of the sights and sounds of spring

Make a list of all that the poet noticed on a spring morning Quote phrases from the poem which suggest the sound of (*a*) the wind (*b*) birds' voices What does the poet say about the hare? What part does the sun play in this poem? Say all you know about the birds mentioned. What can you tell of the rhythm? What do we learn about Wordsworth from the poem? Write the rhyme scheme of one of the stanzas. Tell in your own words what you have noticed on a spring morning (There are blackboard sketches of a stockdove, a jay and a magpie on page 251.)



MISCELLANEOUS POEMS



30 A LITTLE PRAYER

Where'er thou be
On land or sea,
Or in the air,
This little prayer
I pray for thee,—
God keep thee ever,
Day and night,—
Face to the light,—
Thine armour bright,—
Thy 'scutcheon white,—
That no despight
Thine honour smite!—
With infinite
Sweet oversight,
God keep thee ever,
Heart's delight!—
And guard thee whole,
Sweet body, soul,
And spirit high,
That, live or die,
Thou glorify
His Majesty,
And ever be;
Within his sight,
His true and upright,
Sweet and stainless,
Pure and sinless,
Perfect Knight!

John Oxenham.

31 THE NIGHT PIECE

Her eyes the glow-worm lend thee,
The shooting stars attend thee,
  And the elves also,
  Whose little eyes glow
Like the sparks of fire, befriend thee

No Will o' th' Wisp mislight thee,
Nor snake or slow-worm bite thee;
    But on, on thy way,
    Not making a stay,
Since ghost there is none to affright thee

Let not the dark thee cumber,
What though the moon does slumber?
    The stars of the night
    Will lend thee their light,
Like tapers clear without number.

Robert Herrick

32. The Rain

I hear leaves drinking Rain,
  I hear rich leaves on top
Giving the poor beneath
  Drop after drop;
'Tis a sweet noise to hear
These green leaves drinking near

And when the Sun comes out,
  After this Rain shall stop,
A wondrous Light will fill
  Each dark, round drop,
I hope the Sun shines bright;
'Twill be a lovely sight

William H. Davies

33. Silver

Slowly, silently, now the moon
Walks the night in her silver shoon;
This way, and that, she peers, and sees
Silver fruit upon silver trees;
One by one the casements catch
Her beams beneath the silvery thatch;
Couched in his kennel, like a log,
With paws of silver sleeps the dog;
From their shadowy cote the white breasts
  peep
Of doves in a silver-feathered sleep;
A harvest mouse goes scampering by,
With silver claws, and silver eye,
And moveless fish in the water gleam,
By silver reeds in a silver stream.

Walter de la Mare.

34 The Naughty Boy

There was a naughty boy,
  And a naughty boy was he;
He ran away to Scotland,
  The people there to see.

    Then he found
    That the ground
    Was as hard,
    That a yard
    Was as long,
    That a song
    Was as merry,
    That a cherry
    Was as red,
    That lead
    Was as weighty,
    That fourscore
    Was as eighty,
    That a door
    Was as wooden
    As in England—

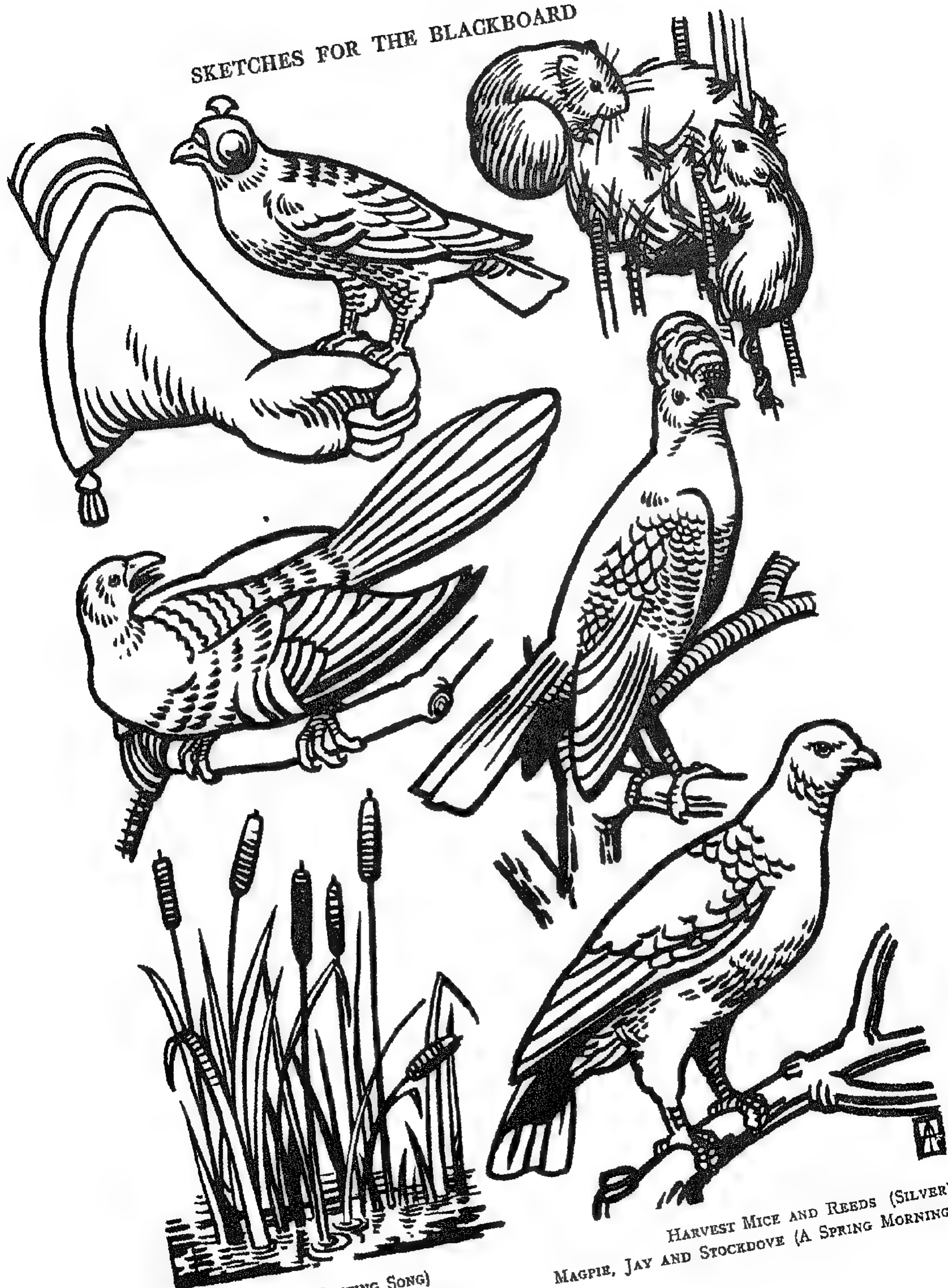
So he stood in his shoes
  And he wondered,
  He wondered,
He stood in his shoes
  And he wondered.

John Keats.



Note The following poems, also included in this work, are well suited to children of eleven years of age: Volume II.—*The Destruction of Sennacherib*; Volume VI.—*Horatius, The Minstrel Boy, Memento Mori, The Great Armada, In Exile, Sir Humphrey Gilbert, Romance, The Message of the Bells, Christmas Bells, King Olaf's Christmas, Christmas Eve.*

SKETCHES FOR THE BLACKBOARD



Hooded Hawk (Hunting Song)

Harvest Mice and Reeds (Silver)

Magpie, Jay and Stockdove (A Spring Morning)

FOURTH YEAR'S COURSE

OF

COMPOSITION



From the painting by Albert Durer— the Albertina Library, Vienna]

HANDS IN PRAYER

(See story on page 287)

INTRODUCTION TO THE FOURTH YEAR'S COURSE OF COMPOSITION

Aim of the course.—The fourth year's course of composition is planned to round off the work of the four years in the junior school, and to give the children a solid foundation on which to build their studies in the secondary school. The exercises are designed, not so much to introduce new fields of work, as to give a wider outlook and a surer grasp upon the work already attempted during the former years In Vol VII, beginning on page 342, there is an alternative course of study for the Fourth Year—Essentials for the Study of English

Scope of the work.—The inclusion of a number of scholarship examination papers has limited the space available for the year's formal course of lessons For this reason, the chapters have been lengthened to cover two or three periods of study in the class-room, and their number has been reduced to twelve, by the expedient of cutting down the number of revision exercises The chief types of exercises are inserted only two or three times during the twelve chapters, and it is left to the teacher to discover those in which his class is least proficient, and to give further examples of them himself, or to select them from the examination papers It must be clearly understood that the actual course of the fourth year is shortened only by this reduction in the number of revision exercises, and continues to provide a secure and ample field of study

The work on grammar covers the use of the simple parts of speech already studied during the previous three years,—the noun, verb, pronoun, adverb and adjective (the definitions of which are given in Volume II.), together with work on conjunctions, the singular and plural numbers, tense and simple analysis. More advanced work in grammar,—such as the comparison of adjectives, and parsing, both of which are occasionally included in a junior fourth year's course,—have been omitted in favour of work of a more generally informative nature Such work includes abundant and varied study of words and phrases, familiar proverbs, and the writing of conversations The dictionary practice begun in the previous year should be unfailingly continued.

Study of form.—Special attention has been paid during this year's course to the study of *form*, with the object that even the dullest children may master the use of certain pegs on which to fasten and classify their ideas in writing. The central aim of the work in composition is to give a measure of proficiency in three types of writing,—descriptive, narrative, and the complete story,—by a knowledge of the framework on which to build the material of each one. This method of study will prove a true foundation for the more advanced "essay" of the secondary school, with its accompanying "abstract" The "Readings" have been chosen to give examples of each of these types of prose, the oral work and exercises on composition based upon the "Reading" being framed to bring out the structure of each type Three varieties of descriptive writing are given the description of a building (chapters 2 and 4), of people (chapters 5 and 11), and of animals (chapter 12) In each case the children are led to notice the orderly arrangement of the description, and are given opportunity to write a passage of their own on similar lines Throughout the work, emphasis is laid upon the function of the paragraph, and the children are encouraged to think

of headings which express the substance of paragraphs in the "Reading" The narrative "Readings" (chapters 7, 8 and 9) also provide simple models for the children's own efforts. The story-telling "Reading" (chapter 3) is specially chosen to bring out the structure of a complete story, which, for the convenience of young pupils, is termed its "beginning, middle and end." Practice in story-writing on the foundations of "beginning, middle and end" is not limited to this lesson, but occurs throughout the course, and should be firmly instilled into the mind of the pupil by the end of his four years' course in the junior school. As in the previous years, subjects which are already familiar to the children are chosen for composition, and the oral discussion continues to hold its important place in all preparatory work

Special attention has been given to letter writing, since this is the form of composition most frequently employed by all of us in everyday life. Suggestions for the arrangement of the subject matter in a letter have also been given, for it has been found that in this case, as well as in other types of writing, the knowledge of some definite form on which to build ideas is of great assistance to the young pupil.

Scholarship examination.—For the convenience of those teachers who are bringing their children to the standard of scholarship examinations, a selection of county scholarship papers has been included. These will speak for themselves, and furnish an indication of any additional work required to be done by children taking the examinations It will be seen that, generally speaking, the work covered by the course given in these volumes is quite sufficient, but that in some cases additional grammatical knowledge is required,—chiefly the use of prepositions, gender, case, particular analysis and parsing.

Teaching hints.—The writer has found it an excellent plan to let children in all classes of the junior school *write* short messages and letters at every odd minute that can be spared for the purpose. It is only by constant practice that children acquire facility in writing. Whatever has to be written let the children decide what is to be the *chief point* of their message; what is to be the *beginning*, *middle* and *end*. Arrange in the time-table for a short "Optional Period" of ten minutes every day, or if possible every session. Keep a box of half sheets of paper always ready, rapidly distribute the sheets and let the children *write* during the ten minutes. Sometimes the writing may be a short passage from dictation, at other times a short story may be read to them once for re-writing. This last "old-fashioned" plan is still useful. It helps the children to listen keenly for the chief point of the story, for the beginning, middle and end. Utilise most of the Optional Time, however, for the writing of messages, telegrams, birthday greetings, notes to the teacher, etc. Occasionally set such exercises as the following —

(1) Write down what you would make your *chief point* if you were asked to write compositions on the following: A Cat Catching a Mouse; A Lion in the *Zoo*; A Snowstorm; A Day in the Country, A Day at the Seaside, etc.

(2) Write down the first or *key* sentences for composition on the following: A Fairy; A Game of Football, An Accident on the Ice.

(3) Name in order the *details* you would mention in writing a composition on Making a Kite, or Mending a Stocking, or Repairing a Puncture.

When reading from books, whether from literature, history or geography, keep the children alert to find the salient points of the narratives. Notice in good prose how the paragraphs are arranged, how emphasis is produced, how a writer frequently begins with a key sentence and then goes on to enlarge on the theme throughout one or

more paragraphs, how, particularly in stories, a climax is produced

Here is an example of the way one might deal with a story in the classroom.

To the children.—In examining a number of anecdotes one usually finds that the various happenings are related in an *orderly way* so as to lead step by step to the *chief point* of the story. This ladderlike arrangement of a narrative is called producing a *climax* (*climax* is a Greek word for *ladder*)

Listen to the following anecdote.—

"There is a well-known story of an old farmer calling his three idle sons around him when on his death-bed, to impart to them an important secret 'My sons,' he said, 'a great treasure lies hid in the estate which I am about to leave to you' The old man gasped 'Where is it hid?' exclaimed the sons in a breath 'I am about to tell you,' said the old man, 'you will have to dig for it——' but his breath failed him before he could impart the weighty secret, and he died Forthwith the sons set to work with spade and mattock upon the long-neglected fields, and they turned up every sod and clod upon the estate. They discovered no treasure, but they learnt to work; and when the fields were sown, and the harvest came, lo! the yield was prodigious, in consequence of the thorough tillage which they had undergone. Then it was that they discovered the treasure concealed in the estate, of which their wise old father had advised them."

In this anecdote you will notice some of the principles to be noted on writing paragraphs. These are —(1) a "key" sentence which gives a word-picture of the scene and states clearly what one is going to read about. (2) there is a "chief point" in the story; viz., *a great treasure was hidden* (3) the sentences are arranged in an orderly way to lead step by step to the "climax" of the story, viz, *when the fields were sown, and the harvests came, lo! the yield was prodigious* (4) there is a "strong closing sentence" which sums up the story and emphasises the point about the treasure

Notice how the interest of the reader is maintained by the ladderlike arrangement of the sentences leading to the climax. Here are some of the rungs of the ladder — the sons gathered round the bedside—the secret was just about to be imparted—the man died—the secret remained untold—excitedly the sons began to dig—day by day they continued the work—the yield was prodigious!

Another important feature of story-writing is the "choice of words" When studying passages from good writings it is a capital plan to preserve lists of some of the writer's descriptive words Note, for instance, the following choice of words in this short anecdote, and see whether you would improve the telling of the story by using other words with similar meanings.—*impart* to them an *important* secret; a *great* treasure, his breath *failed* him; *weighty* secret, *long-neglected* fields (why are these words used?); the *yield was prodigious*, *thorough tillage*, treasure *concealed* in the estate; *wise old* father

The interest in this story is further increased by the introduction of "conversations" between the father and sons

Twelve important rules.—The teacher will find it helpful to keep in mind the following rules for the writing of composition.

Twelve Important Rules for Writing Composition

(1) The opening sentences should give the *key* to the subject about which one is writing

(2) There should be one *chief point* with which the account deals.

(3) The account should convey one *chief impression* to the reader.

(4) The sentences should be set out in an *orderly fashion* to develop the chief point

(5) Exact *details* should be enumerated in proper order, generally beginning with the largest and most easily observed.

(6) Emphasis can be given by *repetition* of words, or words of similar meaning.

(7) In stories and narratives the sentences should lead step by step to a *climax*

(8) Sentences should be *varied in length*; short sentences suggest rapid movement

(9) The introduction of *conversations* makes the account interesting and real

(10) The *closing sentences* should summarise the chief matters dealt with in the composition.

(11) A *plan* should be prepared before writing is commenced

(12) The completed account should be *carefully read*, corrected, and punctuated

1.—LETTER WRITING

Introduction

LETTERS provide the chief field for exercise in English composition in everyday life. For this reason, many of the Exercises throughout this year's course are given in the form of letters, and it has been found useful to provide a standard of letter writing at the outset The children should have plenty of practice in the formalities of letter writing—the address, date, beginning and conclusion—so that these points will neither give difficulty which hinders a free flow of ideas, nor by their faulty execution mar an otherwise good letter

The plan of arranging a letter in "five parts" (see Exercise I) should not be rigorously followed to the extent of cramping the child's natural style It will be found, however, useful to encourage the insertion of paragraphs (2) and (4)—"reference to friend's affairs"—in all friendly letters, as this ensures a measure of politeness and unselfish thought.

As a preface to their study, the pupils will find the following childish letter interesting It was written by Princess Victoria when she was nine years old, to Prince Leopold, afterwards king of the Belgians, "Aunt Sophia" was Princess Sophia, daughter of George III.

Reading

Kensington Palace,
25th November, 1828

My dearest Uncle,

I wish you many happy returns of your birthday, I very often think of you, and I hope to see you soon again, for I am very fond of you. I see my Aunt Sophia often, who looks very well, and is very well. I use every day your pretty soup basin Is it very warm in Italy? It is so mild here, that I go out every day. 'Mama is tolerable well, and I am quite well.

Your affectionate Niece,
Victoria

P S I am very angry with you, Uncle, for you have never written to me once since you went, and that is a long while.

From *Letters of Queen Victoria.*

Oral Work

Where should the address of a letter be written?

Where should the date be written?

How would you begin a letter to (*a*) your aunt, (*b*) your father, (*c*) your brother, (*d*) the doctor; (*e*) the baker?

For what reason did the Princess write to Prince Leopold?

Where was Leopold at the time?

How would you end a letter to· (*a*) your mother, (*b*) your nephew, (*c*) your best friend, (*d*) a clergyman, (*e*) the butcher?

What do the letters P S. stand for?

What is the meaning of post-script? (From the Latin *post*=after, *scribere*=to write)

What is wrong with the sentence. *Mama is tolerable well?*

How many times is the word *very* used in Victoria's letter?

Think of other expressions for. *very often*; *very fond of you*, *she looks very well*, *very angry.*

WRITTEN WORK

I. The composition of a letter.—Write on the blackboard:

17, Bletchley Road,
Sidley,
Sussex,
16th December, 1946.

(1) MY DEAR HAROLD,

(2) Thank you for your long letter. I was interested to hear about the clever dog who performs so many tricks. Your aunt must be glad that you have now taught him to fetch the newspaper, for that is something really useful I hope you will train Fido when you come home, for he needs it.

(3) We all miss you very much Father has been busy on the allotment to-day, and I have been making strawberry jam. Fido stole half a pound of sugar from the larder while I was busy putting the labels on the jam pots Perhaps when you return you will be able also to teach him to be honest May has gone to a party; she says she will be writing to you to-morrow She was delighted to hear that you are bringing a tortoise for her She is going to call him Paul, and keep him in the rockery.

(4) Please give my love to Aunt Emily and thank her for looking after you so well. Let me know on what day to expect you and I will meet you at the station. I hope you will continue to have a happy time Fido sends you a wag of his tail

(5) Your loving Mother,
ISABEL DROWN.

Let the children read this letter and then discuss it orally. They should observe carefully the manner of writing the address and the date The numbers in the margin indicate the five essential parts of a good letter.—(1) Beginning (2) Friend's affairs (3) News. (4) Friend's affairs (5) Ending. Let them consider each of these parts in turn. From (1) and (5) we learn that the letter is written by a mother, Mrs. Isabel Drown, to her son, Harold Drown. In paragraph (2) the mother politely talks about Harold's news before her own, and we learn from this paragraph what his letter was about. Paragraph (3) tells him the news from home. Paragraph (4) again shows that Harold's mother is thinking about him.

The children are now to write the letter which Harold sent to his mother, to which the letter given above is the answer. They may put any address they wish, and date the letter a few days before the date of the given letter Let them arrange their work in the five given parts, of course making the substance of paragraph (3) an account of the clever dog and how Harold taught him to fetch the newspaper

II. The envelope.

A Draw on the blackboard a rectangle to represent an envelope, and from the children's suggestions address it as if it were the letter Harold sent to his mother. This will promote a discussion on punctuation, abbreviations, position of the address on the envelope, capital letters, and so forth The resulting address will be:

Mrs. Drown, (Not Mrs Isabel Drown, for she should take her husband's name)
17, Bletchley Road, (or Rd ,)
Sidley,
Sussex.

B Write on the blackboard.

1 mrs john harris 21 fairfield avenue northampton
2. master david swan rockside maryland road paignton devon
3. frederick gorringe esq 12 marble terrace london n w 2
4. miss catherine grant st margarets school burnside surrey

5 the misses dove 5 burlington terrace llandudno wales

The children must rewrite these addresses as they would stand on envelopes, putting in abbreviations where possible A good plan is to let them draw rectangles in pencil to represent the envelopes and to write an address in the correct position on each one.

III. Subjects for letters.—The following are suggestions to the children for letter writing.

1. Your friend Maurice has invited you to a children's party Write a letter accepting his invitation.

2. Your aunt Amy, has written to invite you to her house for the Easter holidays. Write a letter explaining why you cannot come

3. You are going to spend your Christmas holidays with Uncle Jim, whom you have never seen. Write a letter to him describing yourself so that he will know you when you meet at the station.

4. Write a letter to a farmer, Mr. Giles, asking him to take your dog Bruno for a week while you are camping Tell him on which days you will bring and fetch Bruno Describe Bruno; give instructions about his food, sleep and exercise, and any necessary warnings about his behaviour.

5. Write a letter to your cousin, Gertrude, who lives in Africa, telling her about the games you play in the summer.

6. Your grandmother, who is old and delicate, has sent you a fine paint box for your birthday. Write a letter to thank her, and tell her your home news

7. You have been staying with some friends at the seaside Write a letter to their mother, Mrs Murphy, thanking her for having you and describing your journey home.

The children should make their letters as full and interesting as they can, dividing each letter into the five parts, and inventing the subject of paragraphs (2) and (4)—"friend's affairs"—when these are not suggested.

2.—AN OLD-FASHIONED SCHOOL

Introduction

NATHANIEL HAWTHORNE (1804-1864) is established as the greatest American novelist Many of his books were written for boys and girls, among which was *Grandfather's Chair*, in which are related the adventures of an old chair brought from England to Massachusetts. The stories are of life in early New England.

In reading a descriptive passage of this kind, the children should be trained to notice how subject matter develops from one point to the next, and how it falls naturally into paragraphs which each contain one central thought. The first paragraph describes the general appearance of the schoolroom, its size, floor and windows, the scholars at their desks, and the fireplace. The last point of the first paragraph leads to the subject of the second,—the cheerful fire, with its blaze and smoke. The next paragraph, a very short one, points out the master's chair and its position with regard to the fire. This subject passes naturally into a description, in the last paragraph, of the master himself.

The schoolroom described in the "Reading" should provide an interesting subject of comparison with a modern schoolroom. Exercises on adjectives, word-study and composition are based upon the text.

Reading

"Now, imagine yourselves, my children, in Master Ezekiel Cheever's schoolroom. It is a large, dingy room, with a sanded floor, and is lighted by windows that turn on hinges and have little diamond-shaped panes of glass. The scholars sit on long benches, with desks before them. At one end of the room is a great fireplace, so very spacious that there is room enough for three or four boys to stand in each of the chimney corners. This was the good old fashion of fireplaces, when there was wood enough in

the forests to keep people warm without their digging into the depths of the earth for coal

"It is a winter's day when we take our peep into the schoolroom See what great logs of wood have been rolled into the fireplace, and what a broad, bright blaze goes leaping up the chimney! And every few moments a vast cloud of smoke is puffed into the room, which sails slowly over the heads of the scholars, until it gradually settles upon the walls and ceiling They are blackened with the smoke of many years already.

"Next look at the master's chair! It is placed, you perceive, in the most comfortable part of the room, where the generous glow of the fire is sufficiently felt without being too intensely hot.

"Do you see the venerable schoolmaster, severe in aspect, with a black skullcap on his head, like an ancient Puritan, and the snow of his white beard drifting down to his very girdle? What boy would dare to play, or whisper, or even glance aside from his book, while Master Cheever is on the lookout behind his spectacles? For such offenders, if any such there be, a rod of birch is hanging over the fireplace, and a heavy ferrule lies on the master's desk"

NATHANIEL HAWTHORNE.

Grandfather's Chair

ORAL WORK

The schoolroom which is described existed over a hundred years ago, why does the writer use the word *is* instead of *was*? Say in the present tense A rod of birch was hanging over the fireplace.

Say in the past tense· A heavy ferrule lies on the master's desk

Which words need to be changed to alter the tense of a sentence?

Think of another word for *dingy*

What was on the floor of the schoolroom?

What is on the floor of your schoolroom?

Describe the windows of the old-fashioned schoolroom.

Describe the windows of your schoolroom

On what did the pupils sit?

On what do you sit in school?

What was remarkable about the old-fashioned fireplace?

Why was the fireplace made so large?

Name all the objects in the room which are mentioned in the first paragraph.

Of what does the second paragraph tell?

Do schoolrooms nowadays have fires which always smoke, like that one?

Where was the master's chair placed?

What is the third paragraph about?

Think of another word for *venerable*

What is the meaning of *severe in aspect*?

What is a *skullcap*?

Think of a heading which tells what the fourth paragraph is about.

(The teacher will need to explain that the Puritans were a body of religious men and women who had severe manners and wore plain clothes, the men cut their hair short, unlike the fashion of those times)

What is a *girdle*? What kind of costume must the master have worn to require a girdle?

For what purpose did he keep a *rod of birch*?

What is a *ferrule*?

WRITTEN WORK

I. Adjectives.

Point out to the children the nouns in the "Reading" which are qualified by two adjectives,—*large, dingy* room, *little, diamond-shaped* panes, *broad, bright* blaze. The children will all be familiar with the conventional pairs of adjectives which are used to describe articles displayed in shop windows. Write on the blackboard the following nouns and pairs of adjectives, which make up a grocer's muddled list·

best assorted	·	tomatoes
good fresh	·	apples
fine ripe	·	chocolates
sweet juicy	·	onions
splendid cooking	·	herrings
young spring	·	oranges

The children are to rewrite this list correctly

II. Definitions.

Write on the blackboard:

1 A schoolmaster is a man who teaches children their lessons.
2 A doctor ——
3 A butcher ——
4. A builder ——
5. A tailor ——
6 A postmaster ——
7. A fireman ——

The children must complete these sentences.

III. Past and present tense.

A Write on the blackboard:

1. The room is lighted by windows that turn on hinges and have little panes of glass.
2 It is a winter's day when we take our peep into the schoolroom.
3 A vast cloud of smoke is puffed into the room, which sails over the heads of the scholars and settles on the ceiling.
4 The boys retire, treading softly until they have passed the threshold.

The children must rewrite these sentences in the past tense, their minds having been already prepared during the "Oral Work"

B Write on the blackboard·

1 The schoolmaster was severe in aspect
2. He wore a black skullcap, and the snow of his beard drifted down to his girdle.
3 The master had set everything to rights, and was ready to go home to dinner
4. There stood the old chair, till good Master Cheever resumed his seat in it the next morning.

The children must rewrite these sentences in the present tense.

IV. Words often confused.

A. *Teach* and *learn* Write on the blackboard

1. The master ——, the boys ——
2 When we —— our lessons well we receive good marks.
3. Let me —— you how to sew
4. My master takes pains to —— Billy, but Billy is very slow to ——
5. We will ask Master Ezekiel if he —— his boys the same lessons that we ——

The children must fill the gaps with *teach* or *learn*, adding *s* or *es* to the verb when necessary.

B. *Lay* or *lie*. Write on the blackboard

1 I —— my book on the table when I —— down to rest.
2 The hens in the yard —— eggs for our breakfast
3 Susan often —— too long in bed in the morning
4 Tell the maid to —— the table for tea
5 All the morning the dog —— in his kennel.

The children must fill the gaps with *lay* or *lie*, adding *s* to the verb when necessary.

V. Composition.

Let the children write letters to one of the little boys who attended Ezekiel Cheever's school. Let them give the boy any name they choose, and in their letters compare their school with his. They may begin

Address
Date.

DEAR HARRY,

I have just been reading about your school It is very different from ours Our schoolroom is a large one, too, but——.

There should be some oral discussion before writing the letters, and a guide to orderly arrangement of the subject matter should be written on the board, unless each child has the "Reading" beside him.

3.—OLIVER AND ORLANDO

Introduction

IF the children are acquainted with the name of Shakespeare, it will interest them to know that over a hundred years ago a brother and sister wrote out Shakespeare's famous plays in story form, specially for the use of children The "Reading" is a passage from *As You Like It*; it tells of an incident to which the teacher may wish to give the following introduction —Orlando was the youngest son of a noble lord, who, when he died, left Orlando to the care of his elder brother Oliver, charging Oliver to provide for his brother and give him a good education Oliver, however, cruelly neglected and ill-treated his brother, and finally threatened to burn the chamber where he slept An old and faithful servant overheard Oliver's threat and helped Orlando to escape into the forest where he was forced to live in hiding

The passage is chosen for its quality of being a simple anecdote from which the children may learn the essential framework of every story—the beginning, middle and end. From their earliest study, the children should be taught to recognise in every story its beginning, middle and end, and to build their own story composition on these three unfailing supports The text not only gives an exercise in story-writing, but material has also been chosen from it for the study of the apostrophe, adverbs, opposites, and the singular and plural forms



From the original painting by Droeshout in the Shakespeare Memorial Theatre]

William Shakespeare

Reading

"One morning, as Orlando was going through the forest, he saw a man lying asleep on the ground, and a large green snake had twisted itself about his neck The snake, seeing Orlando approach, glided away among the bushes Orlando went nearer, and then he discovered a lioness lie crouching, with her head on the ground, with a cat-like watch, waiting till the sleeping man awaked (for it is said that lions will prey on nothing that is dead or sleeping) It seemed as if Orlando was sent by Providence to free the man from the danger of the snake and the lioness, but when Orlando looked in the man's face, he perceived that the sleeper, who was exposed to this double peril, was his own brother Oliver, who had so cruelly used him, and had threatened to destroy him by fire, and he was almost tempted to leave him a prey to the hungry lioness but brotherly affection and the gentleness of his nature soon overcame his first anger against his brother and he drew his sword, and attacked the lioness, and slew her, and thus preserved his brother's life both from the venomous snake and from the furious lioness but before Orlando could conquer the lioness, she had torn one of his arms with her sharp claws

"While Orlando was engaged with the lioness, Oliver awaked, and perceiving that

his brother Orlando, whom he had so cruelly treated, was saving him from the fury of a wild beast at the risk of his own life, shame and remorse at once seized him, and he repented of his unworthy conduct, and besought with many tears his brother's pardon for the injuries he had done him Orlando was rejoiced to see him so penitent, and readily forgave him they embraced each other, and from that hour Oliver loved Orlando with a true brotherly affection, though he had come to the forest bent on his destruction."

CHARLES AND MARY LAMB.
Tales from Shakespeare.

ORAL WORK

What does the beginning of the story tell you?

What was the first danger Orlando saw?

What was the second danger Orlando saw?

Why could the man not protect himself?

For what time was the lioness waiting?

Say the masculine of *lioness*

Say the feminine of *prince.*

What is the meaning of *sent by Providence*? (Providence signifies God's providence, the care He exerts over His creatures.)

What was *this double peril*?

Say in one word *destroy by fire.*

What did Orlando discover as he drew near to the man?

What tempted Orlando to leave Oliver as a prey to the lioness?

What two things overcame his anger towards Oliver?

What did Orlando do?

What did the lioness do?

What did Oliver do?

What does the end of the story tell you?

What is the meaning of *penitent*?

What is meant by *bent on his destruction*?

Think of a heading for each paragraph telling what it is about.

WRITTEN WORK

I. The apostrophe. (Lifted comma.)

A Discuss with the children the use of the apostrophe to show *belonging*. We may say: The neck of the man; but we usually say· the man's neck The apostrophe and the *s* in *man's* tell us that the next word means something that belongs to him

Write on the blackboard·

1 The coils of the snake.
2 The prey of the lion
3. The face of the man.
4. The life of his brother.
5 The peril of the sleeper.
6. The fury of the wild beast.

The children must rewrite these words using the apostrophe and *s*

B. When a word is in the plural and already ends in *s*, we need only to add the apostrophe *after* the *s* to show belonging. For The tails of the lions, we write The lions' tails

Write on the blackboard:

1 The nests of the snakes
2 The home of the lions.
3 The perils of the sailors
4 The lives of the two brothers.
5 The fury of wild beasts
6 The desks of the pupils

The children must write these words using the apostrophe

II. Adverbs. (Words which tell *how, when* and *where*)

Discuss with the children the function of an adverb,—a word that tells more about the verb, or action, of the sentence Revise the three principal kinds of adverb (*a*) Adverbs of manner, telling *how* the action was done, as The snake glided *quietly*. (*b*) Adverbs of place, telling *where* it was done, as He went *away*. (*c*) Adverbs of time, telling *when* it was done, as: I saw you *yesterday*.

Write on the blackboard:

1 Oliver had treated his brother (*how?*).
2 Orlando met the danger (*how?*)
3. Take that child (*where?*).
4 Come (*where?*).
5. Tell him to bring the book (*when?*)
6 (*when?*) I had a bad cold, but (*when?*) I am better.

The children must rewrite the sentences filling the gaps with one word that answers the given questions *how, where, when*

III. Story telling.

Discuss with the children the essential framework of every good story,—it must have a beginning, middle and end. Referring to the "Reading". (*a*) *the beginning* tells you that Orlando was walking in a forest, (*b*) *the middle* tells you about his adventures, (*c*) *the end* tells you how his adventures reconciled him to his brother

Write on the blackboard.

1 (*a*) A dog was sauntering along a road
  (*b*) He saw a cat, gave chase and had many adventures.
  (*c*) He came home scratched from nose to tail.
2 (*a*) In a crowded street a little boy let go his mother's hand.
  (*b*) He was lost and had many adventures.
  (*c*) He was brought home by a policeman.
3 (*a*) A girl read a book about fairies
  (*b*) She got up at midnight and went into the garden to look for fairies
  (*c*) She spent the next day in bed.

The children must complete these stories, making them as interesting and full of detail as they can, but they should aim at having one chief point in the story They should always begin with a "key" sentence.

IV. Singular and plural.

A. Write on the blackboard

faces, brothers, snake, head, bushes, lioness furies, injury, children, man, lives, knife

The children must put all the singular words into the plural and vice versa

B Write on the blackboard:

1 The man lies asleep.
2. The snake glided away.
3 The lioness was crouching
4 The sleeper is in danger
5 The brother has much courage

The children must rewrite these sentences in the plural.

V. Opposites.

Write on the blackboard

1 Orlando was *awake* but Oliver lay —(1)—
2. Oliver was *cruel*, but Orlando was —(2)—
3 Orlando fortunately *conquered* the lioness, for they would both have died if she had been —(3)—.
4 Orlando's *hatred* turned to —(4)—.
5. Orlando had the goodness to *preserve* the life of the brother who had threatened to —(5)— him.

The children must make a numbered list of the correct opposites to fill the gaps They need not rewrite the sentences.

4.—THE OLD HOUSE

Introduction

THIS simple description merits the close study of its form. The teacher should point out that each paragraph contains a particular central thought, and that the theme of the whole passage is the age of the house,—it was, as the title also tells us, an *old* house

The opening sentence tells us this chief feature of the house and the second sentence amplifies the first The first paragraph, therefore, is wholly taken up with the idea of the age of the house. In the second

paragraph we read a description of the house and its surroundings The third tells of the rooks which lived in the old trees of the garden. The last paragraph reiterates the main point of the description, and balances the opening paragraph

After oral discussion the children should be able to build up a written description on similar lines, as suggested in Exercise IV Material has been chosen from the "Reading" for work with phrases and adjectives

Reading

"Once upon a time in an old town, in an old street, there stood a very old house Such a house as you could hardly find nowadays, however you searched, for it belonged to a gone-by time—a time now quite passed away

"It stood in a street, but yet it was not like a town house, for though the front opened right on to the pavement, the back windows looked out upon a beautiful, quaintly-terraced garden, with old trees growing so thick and close together that in summer it was like living on the edge of a forest to be near them; and even in winter the web of their interlaced branches hid all clear view behind.

"There was a colony of rooks in this old garden Year after year they held their parliaments and cawed and chattered and fussed, year after year they built their nests and hatched their eggs, year after year, I *suppose*, the old ones gradually died off and the young ones took their place, though, but for knowing this *must* be so, no one would have suspected it, for to all appearance the rooks were always the same—ever and always the same

"Time indeed seemed to stand still in and all about the old house, as if it and the people who inhabited it had got *so* old that they could not get any older, and had outlived the possibility of change"

MRS MOLESWORTH. *The Cuckoo Clock*

Oral Work

What is the chief point of the first sentence?

Think of other words for *searched*, and *gone-by days.*

What is the second paragraph about?

In what way was the house like a town house?

In what way was it like a country house?

What is the meaning of *terraced*?

What does *quaintly* mean?

Think of another word for *interlaced*

Why does the writer speak of the branches as forming a *web*?

What is a *colony*?

When do birds seem to be holding *a parliament*?

When do birds seem to *fuss*?

Why does the writer only *suppose* that the old rooks died off and the young ones took their place?

What is the chief point of the last sentence of the "Reading"?

In what way is the last paragraph like the first?

Find all the words and phrases which convey the idea of *age*.

Written Work

I. Adverbial phrases (Phrases telling *how*, *when* and *where*)

Write on the blackboard

1. Once upon a time.
2. In a gone-by time.
3. In a street.
4. On the edge of a forest.
5. Always the same
6. In and all about

The children must write these phrases, which are taken from the "Reading," in sentences of their own

II. Simple analysis.

A short oral revision on subject and predicate will be necessary The *subject* is

the thing or person we are speaking of, the *predicate* is what is told us about the subject Take the sentence· *Henry has a new bat*, *Henry* is the *subject*, the person we are speaking of; *has a new bat* is the *predicate*, what is told us about Henry

A. Write on the blackboard

1. The house belonged to a gone-by time
2. The front opened right on to the pavement
3. The back windows looked out upon a garden
4. The old trees grew thick and close together
5. The old rooks gradually died off
6. The young ones took their place.
7. Time, indeed, seemed to stand still

The children must divide each sentence into subject and predicate.

B Write on the blackboard

1. The busy streets ——
2. A horse and cart ——
3. The wireless ——
4. Telegraph poles ——
5. A bus driver ——
6. Books ——
7. Boys and girls ——

The children must supply predicates to the subjects, making the sentences as interesting as they can.

C Write on the blackboard:

1. —— lasts many years.
2. —— is a swift runner.
3. —— gobble up the worms and grubs
4. —— make good footballers.
5. —— have long tails
6. —— was hidden behind the clouds
7. —— live in the fields.

The children must add subjects to these predicates, using three or more words wherever possible.

III. Composition.

Discuss with the children the subject of *The New House*, putting on the board the headings of each step in the discussion as it proceeds. Almost every child will be familiar with some newly-erected building. Discuss the situation of a new house—probably in a newly-made road. Discuss the garden—just an enclosed portion of meadow, maybe, with the grass by the house trampled away by the feet of the builders. Then consider whether there might be any trees in the garden—most probably not; any trees would be newly planted, and there would be no rooks' nests in these Discuss the interior of the house, with its new decorations and up-to-date fittings Finally, suggest the family that would move into such a house—probably a newly-married couple.

The children, assisted by the headings on the blackboard, should now write a composition—*The New House*—beginning and ending with forcible sentences which bring out the main point of the house,—its newness

IV. Messages and telegrams.

Write on the blackboard

1. Please send a car to meet Aunt Emily at Tonbridge station Her train arrives at four o'clock this afternoon.
2. I have just put your dog on the train which left Paddington station at eleven o'clock this morning He is in the guard's van
3. John has sprained his ankle and cannot come home to-day. I am keeping him here till next week. Please do not worry about him, I can assure you he will be well looked after.
4. Would you kindly send on my hockey stick and pads which are in the top cupboard of my wardrobe We are going to play a match against Surrey next week

The children must write these messages in the form of telegrams, using the fewest possible words which express the sense of the message. (For example: 1 Aunt Emily arrives Tonbridge 4 p.m send car)

5.—THE GIANT ATLAS

Introduction

As a preface to the "Reading" the teacher may remind the children that Hercules was a famous Greek hero who travelled about the earth performing mighty deeds of strength and courage On one of his journeys he came to the shore of a great ocean on which was floating an enormous golden cup. Hercules climbed into the cup, which floated away over the sea till it brought him to an island. On this island stood the giant Atlas, whose task it was to hold up the sky on his shoulders.

In studying this personal description, as in the case of the description of *The Old House*, the teacher should draw attention to the central thought of each paragraph. The first paragraph describes the appearance and general proportions of the giant; the second tells the details of his features, and the third adds some other interesting information about him Emphasis is laid throughout the "Reading" on the *size* of the giant, many adjectives being employed to bring out this point. We are told that the giant was *intolerably big*, *tall* and *vast*; we read of his *huge eyes*, *great hands*, and *enormous features*. Similes are used to illustrate the same point: the giant was *as tall as a mountain*, the clouds were *like a girdle* for him and *hung like a hoary beard* from his chin, and each of his eyes was *as big as yonder lake* The teacher will probably need to explain to the children the significance of the last paragraph—the giant had been standing there over seven hundred years, as long as it takes an acorn to grow into an ancient oak tree. The teacher should encourage the children to picture for themselves a giant large enough to hold up the sky



[Photo Alinari

Atlas Supporting the Heavens

Reading

"It was a giant!

"But such an intolerably big giant! A giant as tall as a mountain; so vast a giant, that the clouds rested about his midst, like a girdle, and hung like a hoary beard from his chin, and flitted before his huge eyes, so that he could neither see Hercules nor the golden cup in which he was voyaging. And, most wonderful

of all, the giant held up his great hands and appeared to support the sky, which, so far as Hercules could discern through the clouds, was resting upon his head! This does really seem almost too much to believe.

"Just then a breeze wafted away the clouds from before the giant's visage, and Hercules beheld it, with all its enormous features; eyes each of them as big as yonder lake, a nose a mile long, and a mouth of the same width. It was a countenance terrible from its enormity of size, but disconsolate and weary, even as you may see the faces of many people nowadays, who are compelled to sustain burdens beyond their strength.

"Poor fellow! He had evidently stood there a long while. An ancient forest had been growing and decaying round his feet, and oak trees, of six and seven centuries old, had sprung from the acorns, and forced themselves between his toes."

NATHANIEL HAWTHORNE

The Wonder Book

ORAL WORK

What does the opening sentence tell you?

What is the chief point of each of the second and third sentences?

Pick out all the words which tell you about the *size* of the giant

What is the meaning of *hoary*?

Why could the giant not see Hercules?

What did the giant carry on his head?

How was Hercules able at last to see the giant's face?

Which two words are used to mean *face*?

What are *features*?

What adjective is used to describe the giant's features?

How big were the giant's eyes?

How big were his nose and mouth?

What made his face look *terrible*?

What burden had the giant to bear?

What is the meaning of *disconsolate*?

Why was the giant's face *disconsolate and weary*?

Why does the writer call the giant *Poor fellow*?

How do you know that the giant had been standing there a long time?

WRITTEN WORK

I. Similes.

A Write on the blackboard·

1 The giant was as tall as a ——.
2 The clouds rested about his midst, like a ——.
3 They hung from his chin like a hoary ——
4 His eyes were as big as yonder ——

The children must fill in these gaps from memory.

B Write on the blackboard:

1 —— like an eel.
2 —— as proud as a peacock.
3 —— like a scarecrow
4 —— as fair as a lily
5. —— as quiet as a mouse

The children must complete these sentences with words of their own choosing

II. Synonyms.

A. Write on the blackboard:

The giant was as tall as a mountain, and so vast that the clouds rested about his midst. They flitted before his huge eyes and hid his enormous features, while he held up his great hands to support the sky.

Let the children pick out and write in a list the five words in this passage which mean *big*

B Write on the blackboard:

1 The giant *appeared* to *support* the sky.
2 A breeze *wafted* away the clouds.
3. Hercules *beheld* the giant's *visage*.
4. His *countenance* was *disconsolate* and *weary*.
5. He was *compelled* to *sustain* a burden beyond his strength.

6 An *ancient forest* had been growing round his feet.

The children must supply words of similar meaning for those in italics Ask them which sentences they prefer, their own, or those in the "Reading."

III. Joining sentences.

Write on the blackboard.

1 Hercules was a famous Greek hero. *He* travelled round the earth
2 He came to the shore of an ocean. On *it* was floating a golden cup.
3. Hercules climbed into the cup *It* floated away over the sea
4 Hercules saw a giant. *He* was as tall as a mountain.
5 He appeared to support the sky *It* was resting upon his head.
6. People have weary faces *They* sustain burdens beyond their strength.

The children must join these sentences by putting the relative pronouns *who* and *which* in place of the personal pronouns in italics

No 6 is difficult because the relative *who* must follow *people*, it will lead to a useful discussion.

IV. Composition.

The following are easy subjects for composition based on the text:

1. Pretend that you are Hercules and write a letter to your mother who is at home in Greece, telling her about the giant Atlas. You may begin.

My dear Mother,
I cannot tell you my address, for I am on a strange island. I came here——

2. Tell what happened after Hercules met the giant, and finish the adventure in any way you choose. Before you begin to write, decide what the *beginning*, *middle* and *end* of your story shall be Decide, too, what shall be the *chief point* of your story. Try and arrange a *climax* to the story.

6.—ULYSSES DERIDING THE CYCLOPS

Introduction

LUDWIG FRIEDRICH SCHÜTZENBERGER was born in France in 1825 He studied at the École des Beaux Arts in Paris, and died in that city in 1903. Before studying the picture, the children should hear the "Reading," which tells the story of the incident it portrays. A wider view of its mythological background is given here for the use of the teacher in further explanation

Ulysses, historically of a later date than the supposed character of Hercules, was one of the principal Greek heroes in the Trojan war In Greek he is called Odysseus, he was king of Ithaca, a small island on the western coast of Greece When he was but lately married to Penelope, and his only son, Telemachus, was still an infant, the Trojan war began, and Ulysses set off for Troy with a band of men in twelve ships. Troy was taken in the tenth year of the war, and Ulysses' adventures on his journey home form the subject of the Homeric poem, called after him, the "Odyssey" For ten years Ulysses wandered on his homeward voyage.

One of his earlier adventures was in the land of the Cyclops, a pastoral people of one-eyed giants Ulysses encountered the Cyclops Polyphemus, and destroyed his one eye. Polyphemus was a son of Poseidon, the god of the sea, and he besought his father to avenge this act, thus it was that Poseidon, to punish Ulysses, sent him wandering for ten long years before he reached home The details of Ulysses' adventure with the Cyclops are told in the "Reading," which opens at the point where Ulysses and a small band of his men are shut up in the giant's cave. The picture shows Ulysses' departure from the land of the Cyclops. He stands on the prow of the boat, mocking the blinded Polyphemus, who in his rage hurls a rock after the ship and prays to his father, Poseidon, to avenge the injury.

SKETCH FOR THE BLACKBOARD



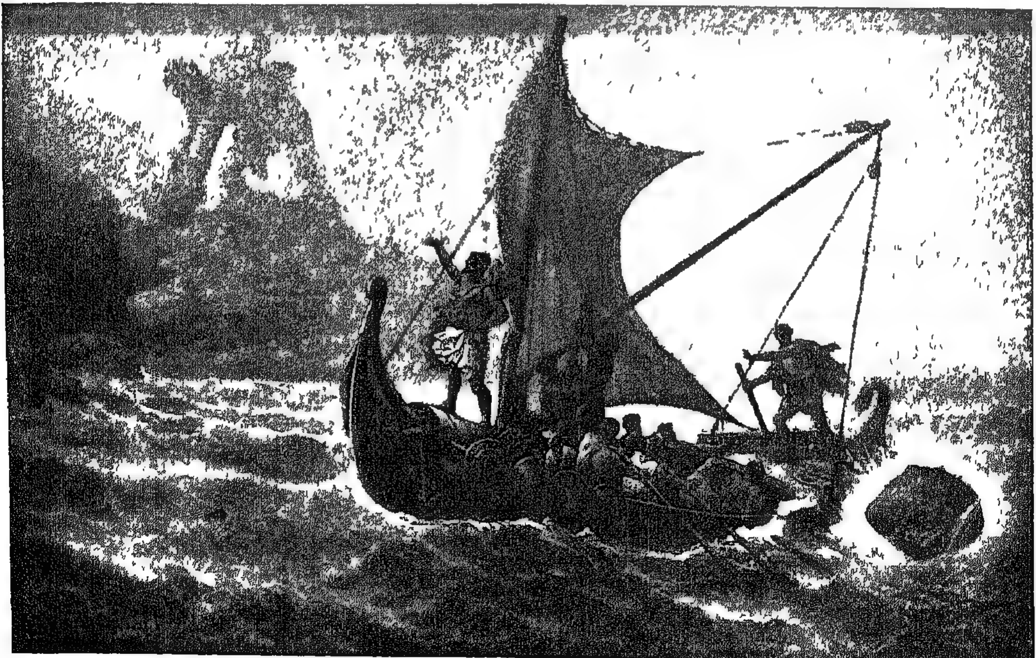
HERCULES AND THE LION

Reading

"Ulysses did not give way to despair The giant had left his stick in the cave; it was as large as the mast of a great ship From this Ulysses cut a portion six feet long, and his men cut and rubbed as if they were making a spear shaft: Ulysses then sharpened it to a point, and hardened the point in the fire It was a thick, rounded bar of wood, and the men cast lots to choose four who should twist the bar in the giant's eye when he fell asleep at night. Back he came at sunset, and drove his flocks into the cave, rams and all. Then he put up his stone door, milked his ewes, and killed two men and cooked them.

"Ulysses meanwhile had filled one of the wooden, ivy bowls full of the strong wine of Maron without putting a drop of water into it This bowl he offered to the giant, who had never heard of wine He drank one bowl after another, and when he was merry he said that he would make Ulysses a present. 'What is your name?' he asked 'My name is *Nobody*,' said Ulysses. 'Then I shall eat the others first and Nobody last,' said the giant 'That shall be your gift' Then he fell asleep.

"Ulysses took his bar of wood, and made the point red-hot in the fire. Next his four men rammed it into the giant's one eye, and held it down, while Ulysses twirled it round. The Cyclops roared and leaped to his feet, and shouted for help to the other giants who lived in the neighbouring caves 'Who is troubling you, Polyphemus?' they answered 'Why do you wake us out of our sleep?' The giant answered, 'Nobody is killing me by his cunning, not at all in fair fight.' 'Then if nobody is harming you nobody can help you,' shouted a giant. 'If you are ill, pray to your father, Poseidon, who is the god of the sea' So the giants all



From the picture by Schützenberger] *Copyright Braun & Cie*

Ulysses Deriding the Cyclops
(Class Picture No 156 in the portfolio)

went back to bed, and Ulysses laughed low to see how his cunning had deceived them Then the giant went and took down his door and sat in the doorway, stretching out his arms, so as to catch his prisoners as they went out.

"But Ulysses had a plan He fastened sets of three rams together with twisted withies, and bound a man to each ram in the middle, so that the blind giant's hands would feel only the two outside rams. The biggest and strongest ram Ulysses seized, and held on by his hands and feet to its fleece, under its belly, and then all the sheep went out through the doorway, and the giant felt them, but did not know that they were carrying out the men. 'Dear ram!' he said to the biggest, which carried Ulysses, 'you do not come out first, as usual, but last, as if you were slow with sorrow for your master, whose eye Nobody has blinded.'

"Then all the rams went out into the open country, and Ulysses unfastened his men, and drove the sheep down to his ship and so on board His crew wept when they heard of the death of six of their friends, but Ulysses made them row out to sea When he was just so far away from the cave as to be within hearing distance, he shouted at the Cyclops and mocked him Then that giant broke off the rocky peak of a great hill and threw it in the direction of the sound. The rock fell in front of the ship, and raised a wave that drove it back to shore, but Ulysses punted it off with a long pole, and his men rowed out again, far out. Ulysses again shouted to the giant, 'If any one asks you who blinded you, say that it was Ulysses, Laertes' son, of Ithaca, the stormer of cities.'

"Then the giant prayed to the Sea-god, his father, that Ulysses might never come home, or if he did, that he might come late and lonely, with loss of all his men, and find sorrow in his house Then the giant heaved and threw another rock, but it fell at the stern of the ship, and the wave drove the ship farther out to sea, to the shore of an island There Ulysses and his men landed, and killed some of the giant's sheep, and took supper, and drank wine.

"But the Sea-god heard the prayer of his son, the blind giant"

ANDREW LANG *Tales of Greece and Troy.*

ORAL WORK

From the Reading.

What does the beginning of the story tell you?

What preparations did Ulysses make?

What did Polyphemus do when he came home?

What did Ulysses give the giant?

What name did Ulysses say was his?

What gift did the giant promise Ulysses?

Tell how Ulysses blinded the Cyclops

Why did the other giants not come to help Polyphemus?

How did the giant try to catch the prisoners?

Tell how Ulysses and his men escaped.

What did they do with the sheep?

How did the giant know where and who Ulysses was?

What revenge did the giant take?

What does the end of the story tell you?

What do you know of the rest of Ulysses' adventures from the last sentence of the "Reading"?

From the Picture.

Where can you see the giant Polyphemus?

What is the giant doing?

How was it that the giant did not manage to hit the ship?

Who is the man standing on the prow of the ship?

Describe the man's dress

Of what nationality is he?

Where is the steersman?

What is the steersman doing?

What are the men doing who are standing in the middle of the ship?

How many men can you see rowing?

What creatures can you see in the ship?

Where did these animals come from?

What is hanging from the prow of the ship?

What are the four discs along the side of the ship?

Written Work

I. Conjunctions.

Write on the blackboard:

but, that, as if, because, although, while, until, lest.

1. Ulysses and his men were not idle. They were in the cave.
2. The men cut and rubbed the stick. They were making a spear shaft.
3. They were forced to wait. The giant was asleep.
4. The giant could not see to catch them He was blind
5. Ulysses did not laugh loudly. The giant should hear him
6. Most of the men were saved. Six were eaten
7. His crew would have stayed to weep. Ulysses made them row out to sea.
8. The giant prayed. Ulysses might never come home

The children must join these sentences with one of the given conjunctions, which may be written with the numbers of the sentences, instead of rewriting the sentences.

II. Pronouns.

A. Write on the blackboard:

1. *Ulysses* sharpened *the stick* to a point.
2. *The giant* killed two men and cooked *the men*
3. Ulysses filled the bowl and gave *the bowl* to *the giant*.
4. *The giants* answered, "Why do you wake *the giants* out of our sleep?"
5. *The rams* went out bound two and two
6. *The men* saw the giant break off a fragment of rock and hurl *the rock* at *the men*

The children must substitute pronouns for the words in italics

III. Imaginative writing.

Write on the blackboard:

After sailing for twelve hours, Ulysses sighted a mighty rock which towered out of the water, and, thinking it might be an island, he turned his course thither As the ship approached the rock, he and his men heard a rumbling sound, which grew louder and louder——

The children must complete this story, deciding in their own minds what shall be the *middle* and *end* of it, before they begin to write. Let them decide, too, what is to be the *chief point* of their story, and also arrange a *climax* for it.

IV. Messages and telegrams.

Write on the blackboard:

1. Christmas greetings.
2. Meet me car Euston station 7 p.m. Wednesday.
3. Come to-morrow for three weeks bring racquet and bathing costume.
4. Happy birthday.
6 Father ill come home.

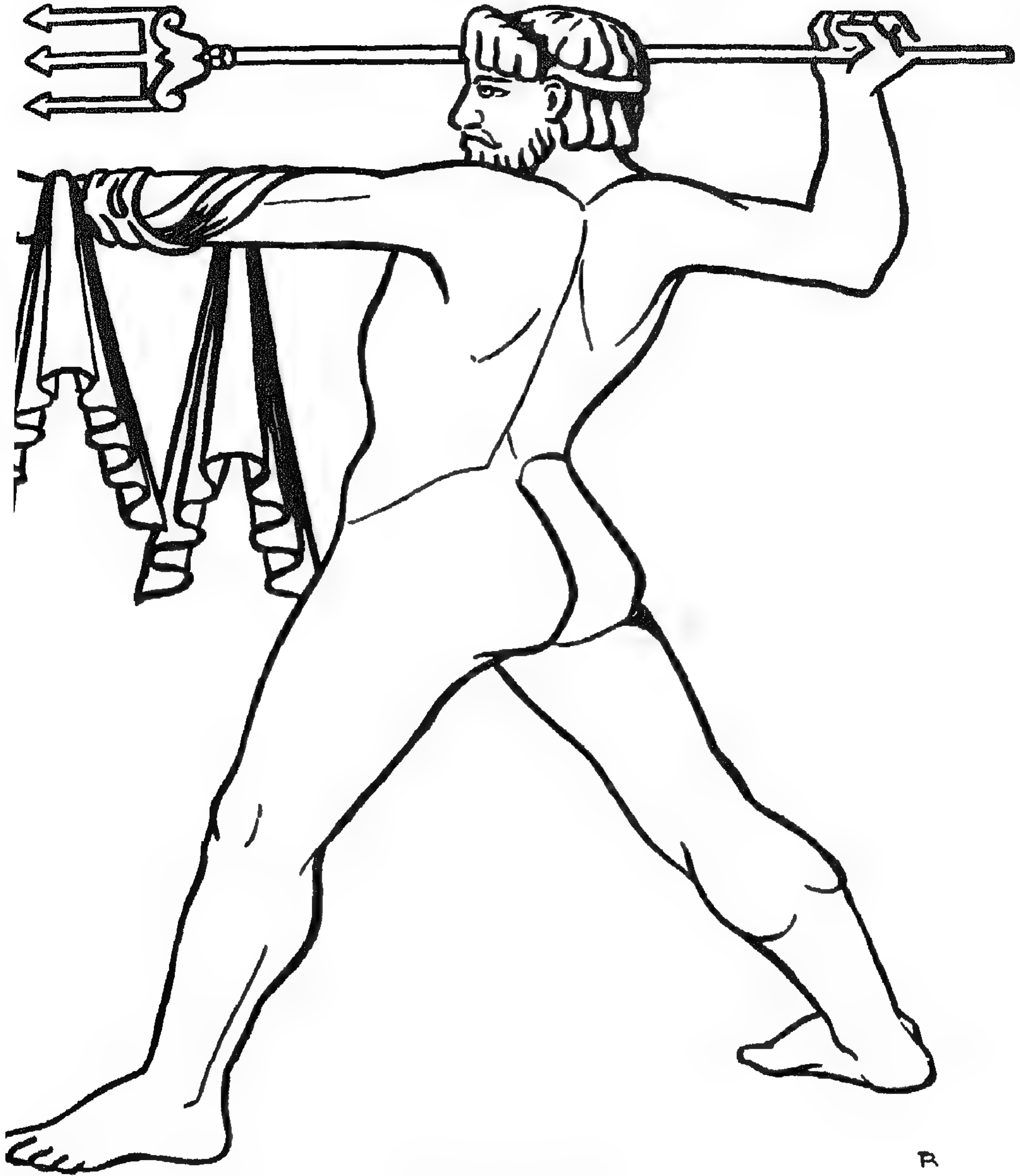
The children must expand these telegrams into interesting and polite messages, adding any details they please.

7.—GUIDO IN THE CORNFIELD

Introduction

THIS delightful narrative extract supplies material for a variety of exercises. The children should be encouraged to visualise the scene,—the yellow corn on the hillside, the yellow curls of a little boy only as tall as the wheat itself. The language is so simple that the children will find it easy to pay attention to the details Have *they* ever seen a humblebee? A scarlet fly? A bright yellow wasp? A golden fly? Let them find words to describe the character of Guido,—he watched all the plants and animals, he listened to their

SKETCH FOR THE BLACKBOARD



Poseidon (Neptune)

voices, he saved a mouse from the clutches of a hawk.

The subject matter falls naturally into three paragraphs. The first describes the scene of the narrative and gives its context. The second paragraph tells in minute detail all the things Guido noticed as he sat among the corn. The last paragraph tells an incident which is complete in itself as a story. Encourage the children to discuss the form of this story. It has a *beginning*—something went over, a *middle*—the hawk's preparations and swoop into the corn, with Guido's interference, and it has an *end*—the mouse escaped.

Reading

"All the time Guido was descending the slope, for little feet always go down the hill as water does, and when he looked back he found that he had left the fir trees so far behind that he was in the middle of the field. If people had looked they could hardly have seen him, and if he had taken his cap off they could not have done so because the yellow curls would be so much the same colour as the yellow corn. He stooped to see how nicely he could hide himself, then he knelt, and in a minute sat down, so that the wheat rose up high above him.

"Another humblebee went over along the tips of the wheat—burr-rr—as he passed; then a scarlet fly, and next a bright yellow wasp who was telling a friend flying behind him that he knew where there was such a capital piece of wood to bite up into tiny pieces and make into paper for the nest in the thatch, but his friend wanted to go to the house because there was a pear quite ripe there on the wall. Next came a moth, and after the moth a golden fly, and three gnats, and a mouse ran along the dry ground with a curious sniffling rustle close to Guido. A shrill cry came down out of the air, and looking up he saw two swifts turning circles, and as they passed each other they shrieked—their voices were so shrill they shrieked. They were only saying that in a month their little swifts in the slates would be able to fly.

"Suddenly he thought something went over, and yet he did not see it—perhaps it was the shadow—and he looked up and saw a large bird not very far up, not farther than he could fling, or shoot his arrows, and the bird was fluttering his wings, but did not move away farther, as if he had been tied in the air. Guido knew it was a hawk, and the hawk was staying there to see if there was a mouse or a little bird in the wheat. After a minute the hawk stopped fluttering and lifted his wings together as a butterfly does when he shuts his, and down the hawk came, straight into the corn. 'Go away!' shouted Guido jumping up and flinging his cap, and the hawk, dreadfully frightened and terribly cross, checked himself and rose again with an angry rush. So the mouse escaped, but Guido could not find his cap for some time."

RICHARD JEFFERIES. *The Open Air*

Oral Work

What is the meaning of *descending*?

What is a *slope*?

Which is the easier way to go, up a hill or down it? Why do the feet of children go down a hill? In what way are "little feet" like water?

Why could no one have seen Guido if he had taken his hat off?

What time of the year was it?

How old do you think Guido must have been to be as tall as the wheat?

Think of a heading for the first paragraph.

What did the humblebee say?

What colour is *scarlet*?

What did the yellow wasp tell his friend? Why did the wasp want a piece of wood? What is a *thatch*?

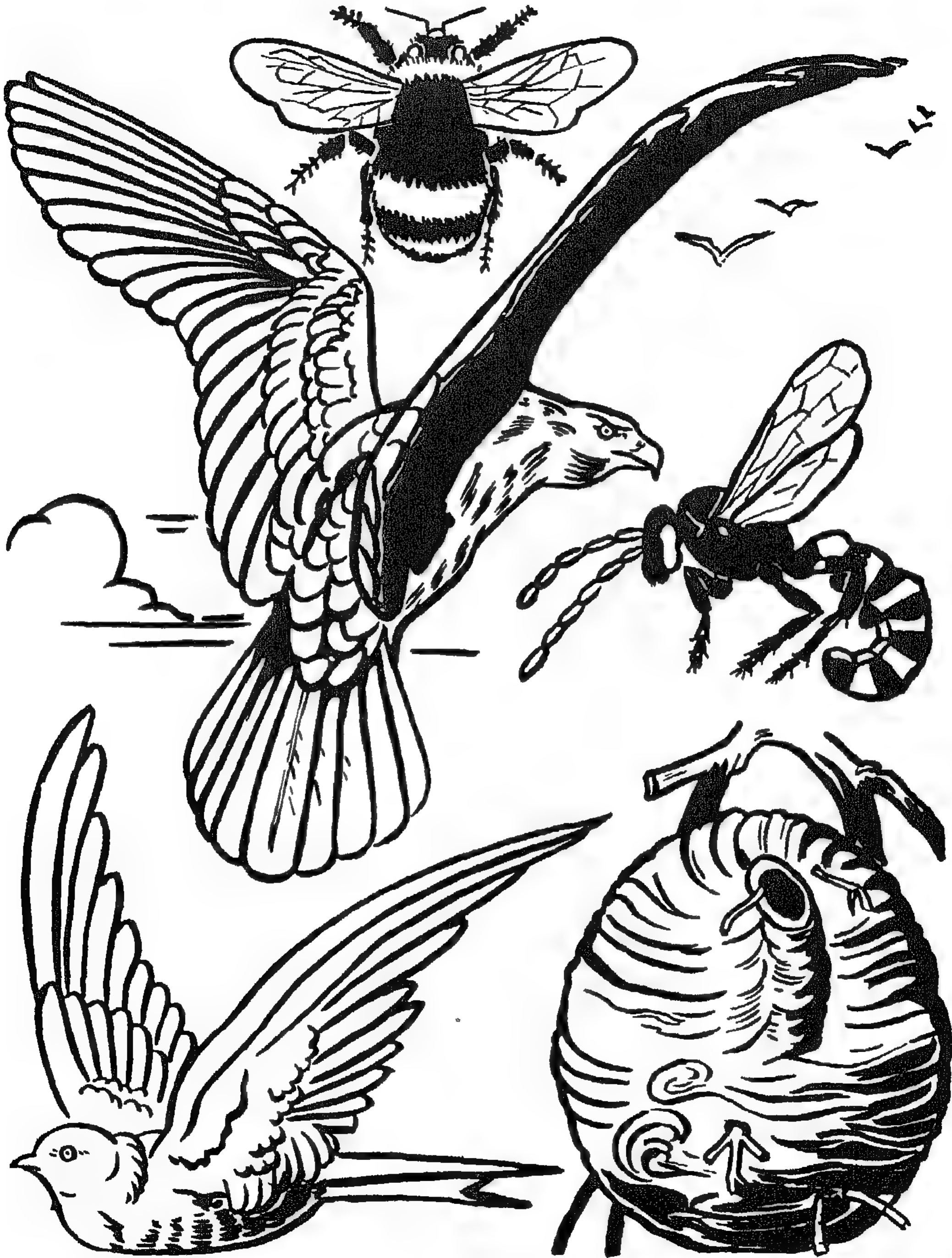
What did the wasp's friend want to do?

What winged insects flew by?

What noise did the mouse make?

What is meant by *two swifts turning circles*? (A swift is a bird which resembles a swallow.)

SKETCHES FOR THE BLACKBOARD



Humblebee | Hawk | Wasp
Swift | | Wasps' Nest

Why did their cry sound like a shriek?

What were they saying?

What is meant by *little swifts in the slates*?

Of what does the third paragraph tell? Think of a heading for it.

Where would Guido have seen the shadow of the large bird? Have you seen the shadows made by passing clouds on a sunny day?

How high can a boy fling a stone or shoot an arrow?

What was strange about the bird?

What was the name of the bird?

Why was it poised in the air?

What happened next?

What did Guido do?

What did the hawk do?

What had the mouse to do with the story?

What is the meaning of *escaped*?

What is the beginning of the story of the hawk?

What is the middle of the story?

What is the end of the story?

Think of a title for the story told in the last paragraph

Written Work

I. "Ladders" of action.

Write on the blackboard:

1 He stooped, he knelt, he sat
2. He sauntered, he ——, he ran.
3 He glanced, he ——, he stared
4 He shut his eyes, he ——, he fell asleep.
5. He stirred, he ——, he woke right up
6 He sniffed, he ——, he howled
7 He smiled, he ——, he laughed outright.
8 He opened his mouth, he —— he shouted.

The missing verbs in this exercise express the intermediate stage between the two actions given, the three actions forming a "ladder." The children must rewrite the exercises, putting in the verb or phrase which supplies the middle rung of each "ladder," as in the first example which is taken from the "Reading." Suitable words to fill the gaps would be: 2 walked, 3. looked; 4. dozed; 5 opened his eyes; 6. cried, 7. giggled, 8. spoke.

II. Writing conversations.

A. Write on the blackboard:

1 A bright yellow wasp was telling his friend that he knew where there was such a capital piece of wood to bite up into tiny pieces and make into paper for the nest in the thatch
2. But his friend wanted to go to the house because there was a pear quite ripe there on the wall
3 The swifts were saying that in a month their little swifts in the slates would be able to fly.

The children must rewrite these passages, giving the actual words spoken by the wasps and the swifts, and putting in the necessary punctuation marks and capital letters.

B Let the children write an imaginary conversation between two horses.

III. Names of familiar things.

Write on the blackboard

1. In summer you may find growing in a meadow daisies, buttercups, etc
2 In my aunt's garden I found roses, sweet peas, etc.
3. I do not like creatures which crawl,—worms, centipedes, etc
4 Many insects fly about in the sunshine, butterflies, dragon flies, etc.

The children must add three more names appropriate to each list instead of *etc.*

IV. Past and present tense.

Write on the blackboard.

1. Guido *knows* it *is* a hawk, and the hawk *is* staying there to see if there *is* a mouse or a little bird in the wheat

2. After a minute the hawk *stops* fluttering and *lifts* his wings together, and down he *comes* straight into the corn
3 So the mouse *escapes*, but Guido *cannot* find his cap for some time.
4 The horses *have* such glossy coats, and they *are* so strong and beautiful
5 They *draw* the ploughs along and *make* the ground give up its sweetness and savour, and while they *are* doing it, the spiders *spin* their silk along from the ash poles, and the mist in the morning *weighs* down their threads

The children must rewrite these sentences, telling the story as if it happened yesterday, by changing the verbs in italics into the past tense.

V. Familiar proverbs.

Write on the blackboard·

A bird in the hand is worth two in the bush.
A bird of passage
The early bird catches the worm.
A little bird told me
Kill two birds with one stone

1 My uncle visits us only now and again he is —(1)—.
2. I shall keep my book and not try to change it for others, for —(2)—.
3 —(3)— your secret
4 I shall go to the market before nine to morrow, for —(4)—
5 If I cook the cakes at the same time as the mutton, I shall —(5)—

Each proverb completes one of the given sentences The children must write out the proverbs with their appropriate numbers according to the sentences. They may also explain in a few words the meaning of each proverb.

(There are blackboard sketches of a humblebee, wasp, wasps' nest, swift and hawk on page 277.)

8.—THE CRATCHITS' CHRISTMAS PUDDING

Introduction

(The extract selected for this lesson is taken from *A Christmas Carol*, by Charles Dickens)

THE teacher should first explain that the Cratchit family was a very poor one; the father, Bob Cratchit, was a miser's clerk, who earned only fifteen shillings a week Yet these poor people were so kindly and good-spirited that they contrived to have a merry Christmas

This lively narrative should give real entertainment to the children when read aloud to them in a sympathetic manner If time permits, certain members of the class should be allowed to study the passage silently, and then give their own rendering



Charles Dickens

of it by reading it aloud. They should be encouraged to try to enter into the scene themselves, and in their reading to describe it with interest and vivacity. Unnatural and forced expression, however, should not be allowed

The passage provides material for word-study, practice in similes, writing conversations, and the composition of paragraphs in imitation of the style of the writer The teacher should draw attention to the "ladder of excitement" constructed in the third paragraph. first there was the sign that the pudding was out of the copper, then that the cloth was being taken off, and at last the appearance of the pudding itself

Reading

"But now, the plates being changed, Mrs Cratchit left the room alone—too nervous to bear witnesses—to take the pudding up and bring it in.

"Suppose it should not be done enough! Suppose it should break in turning out! Suppose somebody should have got over the wall of the back-yard, and stolen it, while they were merry with the goose—a supposition at which the two young Cratchits became livid! All sorts of horrors were supposed

"Hallo! A great deal of steam! The pudding was out of the copper. A smell like a washing-day! That was the cloth A smell like an eating-house and a pastry cook's next door to that! That was the pudding! In half a minute Mrs Cratchit entered—flushed but smiling proudly—with the pudding, like a speckled cannon-ball, so hard and firm, blazing in half of half a quartern of ignited brandy, and bedight with Christmas holly stuck into the top.

"Oh, a wonderful pudding! Bob Cratchit said, and calmly too, that he regarded it as the greatest success achieved by Mrs Cratchit since their marriage. Mrs. Cratchit said that now the weight was off her mind, she would confess she had had her doubts about the quantity of flour. Everybody had something to say about it, but nobody said or thought it was at all a small pudding for a large family. Any Cratchit would have blushed to hint at such a thing."

CHARLES DICKENS. *A Christmas Carol*

Oral Work

What is meant by *witnesses*? Why was Mrs. Cratchit too nervous to bear witnesses?

What is the second paragraph about?

Who were the people who supposed "all sorts of horrors"?

What is the meaning of *livid*? What caused the two young Cratchits to become livid?

How did the family at table know when the pudding was out of the copper?

What caused the smell "like a washing-day"?

Of what does an eating-house smell?

Of what does a pastry-cook's smell?

Of what does a laundry smell?

Tell in what ways the pudding could smell like these three places

What are the three steps in the "ladder of excitement" in this paragraph?

How much is half of half a quartern? (A quartern is the fourth part of a pint = a gill)

Think of another word for *ignited*.

Bedight is an old-fashioned word for *bedecked* What do these words mean? (Adorned, arrayed, decked out)

What did Bob Cratchit say?

What did Mrs Cratchit say?

Do you think that the pudding was really a small one for a large family?

Written Work

I. Word Study.

A Write on the blackboard:

1. Mrs Cratchit was —— nervous —— bear witnesses
2. She left the room —— take up the pudding and was gone —— or three minutes

3. The young Cratchits were —— excited —— sit still.
4. Nobody would dare —— hint that the pudding was —— small.

The children must fill the gaps with *to*, *too* or *two*

B. Write on the blackboard:

1. Mrs. Cratchit *took* up the pudding.
2. Outside our house the men are *taking* up the road.
3. The furniture removers *took* the piano upstairs.
4. I put the box away because it *took up* too much space.
5. He *took* up his hat and went to the door.
6. He *took off* his hat as we passed.

The children must change the words or word in italics for a more precise verb (For example 1. dished; 2. breaking, 3. carried; 4 occupied, filled; 5 picked, 6. lifted, raised)

II. Similes.

Write on the blackboard·

1. The pudding looked like a speckled cannon ball
2. —— like a flash of light.
3. —— like a frightened rabbit
4. —— like thunder
5. —— like a lamb.

The children must supply the first part of these sentences.

III. Nouns formed from verbs.

Write on the blackboard:

1. (*a*) *Suppose* someone had stolen the pudding! (*b*) The two young Cratchits became livid at the *supposition*.
2. (*a*) *Please* do not go away. (*b*) Your visit has been a great ——.
3. (*a*) Cats often *live* to be fifteen years old. (*b*) A schoolboy leads an adventurous ——.
4. (*a*) We must *obey* and honour the King. (*b*) Your dog is remarkable for its ——
5. (*a*) Wait and *see* (*b*) The use of spectacles has greatly improved my ——
6. (*a*) She *laughed* as she spoke. (*b*) I heard the sound of —— coming from the schoolroom.

The children must insert the noun derived from the verb in italics, as in Example 1, which is taken from the "Reading."

IV. Conversations.

Write on the blackboard·

1. The youngest Cratchit said that he hoped the pudding would not break in turning out.
2. The eldest Cratchit said that she hoped it would be done enough.
3. Bob Cratchit suggested that someone might have stolen it while they were busy with the goose.
4. Mrs. Cratchit said that she had had her doubts about the quantity of flour.
5. Bob Cratchit said that he regarded it as the greatest success achieved by Mrs. Cratchit since their marriage.

The children must rewrite these passages to show the actual words used by each speaker.

V. Composition.

In a style similar to the "Reading," let the children write a short paragraph on

1. A school match.
2. A party.
3. Having a tooth out.

9.—GERDA GOES TO LAPLAND

Introduction

[The extract selected for this lesson is taken from one of Hans Andersen's *Fairy Tales*]

As a preface to the "Reading" the teacher should explain that Gerda was a little girl in search of her playfellow, who had been stolen away by the Snow Queen On her travels Gerda met



HANS ANDERSEN

a Robber maiden who agreed to help her. She gave Gerda her pet reindeer, which was to carry her to Lapland, where she would find the palace of the Snow Queen The "Reading" tells how Gerda travelled on the reindeer to Lapland, where she finally found and rescued her playfellow The children will need to know the meaning of Northern Lights,—the aurora borealis—brilliant lights which are seen in the sky in the lands of the far north

The teacher should point out that the substance of this narrative may be divided according to its paragraphs. The first paragraph gives the reason and instructions for the journey. The second paragraph is concerned with the preparation for the journey, while the third describes the start The fourth tells about the journey itself, and the fifth about the arrival. These five headings should be discussed and written up on the blackboard during the Oral Work, for they form a basis on which to build the written composition work

Various exercises are based on material taken from the text.

READING

"The Reindeer bounded with joy, and the Robber maiden lifted Gerda on his back, taking the precaution to bind her on firmly, as well as to give her a little cushion to sit on 'And here,' said she, 'are your fur boots, you will need them in that cold country. The muff I must keep myself, it is too pretty to part with, but you shall not be frozen; here are my mother's huge gloves—they reach up to the elbow—put them on. Now your hands look as clumsy as my old mother's!'

"And Gerda shed tears of joy 'I cannot bear to see you crying!' said the little Robber maiden; 'you ought to look glad. See, here are two loaves and a piece of bacon for you that you may not be hungry on the way.' She fastened this provender also on the Reindeer's back, opened the door, called away the great dogs, and then cutting asunder with her dagger the rope which bound the Reindeer, shouted to him, 'Now, then, run! but take good care of the little girl'

"And Gerda stretched out her hands to the Robber maiden, and bade her farewell, and the Reindeer fleeted through the forest,—over stock and stone, over desert and heath, over meadow and moor. The wolves howled and the ravens shrieked 'Isch, isch!' a red light flashed; one might have fancied the sky was sneezing

"'Those are my dear old Northern Lights!' said the Reindeer, 'look at them, how beautiful they are!' And he ran faster than ever; night and day he ran The loaves were eaten, so was the bacon, at last they were in Lapland"

HANS ANDERSEN. *Fairy Tales.*

ORAL WORK

For what purpose is a *rein* used? What does the word *rein-deer* suggest? Are reindeer

harnessed with reins to draw carts? What do they draw? Who is always pictured as driving a sledge drawn by reindeer? Describe a reindeer.

What is the plural of *reindeer*?

How used the Robber maiden to amuse herself with her pet Reindeer?

What is a *dagger*?

Think of another word which means *droll*

What did the Robber maiden say she would do?

On what condition was the Reindeer allowed to go free?

Where was he to go?

Where is Lapland?

What is the first paragraph about? Think of a heading for it.

What does the second paragraph tell? Think of a heading for it.

Was the Reindeer pleased or displeased at the news?

What precautions did the Robber maiden take to make Gerda comfortable on the Reindeer's back?

What did she give Gerda to protect her from the cold?

Why did Gerda cry?

What did she have for food on her journey?

What is another name for *provender*?

Think of a heading for the third paragraph

Tell how Gerda left the Robber maiden

Think of another word for *fleeted*

What is the meaning of *over stock and stone*? (A *stock* is the stump of a tree left standing)

What is a *desert*? A *heath*? A *meadow*? A *moor*? Why do you think the writer tells us of all these things by name?

What common animal is like a wolf?

Think of a heading for the fourth paragraph.

Did the Northern Lights really make a noise when they flashed?

What effect did the sight of the Northern Lights have upon the Reindeer?

What is the chief point of the last paragraph? Think of a heading for it.

WRITTEN WORK

I. Insertion of verbs.

Write on the blackboard:

1 The Reindeer —— with joy, and the Robber maiden —— Gerda on his back, taking the precaution to —— her on firmly, as well as to —— her a little cushion to —— on

2 And Gerda —— out her hands to the Robber maiden, and —— her farewell, and the Reindeer —— through the forest, over stock and stone, over desert and heath, over meadow and moor The wolves —— and the ravens ——

3 "Isch, isch!" a red light ——, one might have —— the sky was sneezing.

The children must write with their numbers a list of the missing verbs as nearly like those in the "Reading" as they can remember

II. Pairs of words which sound alike.

Write on the blackboard:

1 reins, rains The coachman would not let me take the —(1)— of the horses, because the recent —(2)— had made the road slippery

2 deer, dear. The flesh of the —(3)— is called venison, a meat which is —(4)— to buy

3 fir, fur Put on your —(5)— gloves and come with me to the clump of —(6)— trees

4 kneads, needs The baker —(7)— bread to supply the —(8)— of his customers

5 here, hear Did you —(9)— the music when you were —(10)— yesterday?

6 through, threw Richard —(11)— his ball —(12)— a window

7 piece, peace Mary gave her sister a —(13)— of chocolate to make —(14)— between them after their quarrel.

8. great, grate. The —(15)— cat sat warming himself by the kitchen —(16)—.

The children must write the missing words with their correct numbers.

III. Improving a disconnected account.

Write on the blackboard:

She fastened this provender also on the Reindeer's back She opened the door. She called away the great dogs. She cut asunder the rope with her dagger. The rope bound the Reindeer. As she did so she shouted to him. She shouted, "Now, then, run! but take good care of the little girl"

The children must rewrite this passage, joining the disconnected sentences in any way they please to make them run smoothly. The children's efforts should afterwards be compared with the original passage in the "Reading."

IV. Use of phrases.

Write on the blackboard.

1 A few more times
2. Never mind
3. On condition that.
4 Taking the precaution
5 Up to the elbow.

The children must write these phrases, which have been chosen from the "Reading," in sentences of their own.

V. The apostrophe.

A Write on the blackboard:

1 The dagger of the robber.
2. The daggers of the robbers.
3 The fur boots of Gerda.
4 The huge gloves of my mother
5. The joy of the two little girls
6. The back of the Reindeer.
7. The farewell of the children.
8. The howling of the wolves.
9 The shrieks of the ravens

The children must rewrite these phrases with the apostrophe and (where necessary) the *s* also.

B Discuss with the children the second use of the apostrophe to show *letters left out*, *do not* may be written *don't*, the apostrophe standing instead of the letter *o*.

Write on the blackboard

(1) Can't (2) Haven't. (3) Let's. (4) It's (5) Hadn't. (6) I'll (7) You'll.

The children must write out these words in full.

VI. Composition.

The "Reading" provides a capital model for the account of a journey, which should be arranged under the headings given to the paragraphs during the Oral Work Each child must decide for itself the purpose and nature of the journey,—going to a school match on a tram car, or walking to a friend's house for a party. The headings of the paragraphs may be arranged as follows.

1. *Opening paragraph* In this paragraph the children should tell where they are going, how they will travel, and with whom The more advanced pupils may be able to follow the model of the "Reading" more closely, and give these details in the form of instructions to a friend. Such pupils may begin One fine afternoon I said to my friend, "Now, John, we are going to a picnic. . . ."

2. *The preparation for the journey.* Here the children should tell what they had to wear and to carry.

3. *The start.* Let them tell here how they set off

4. *The journey* This paragraph should give an account of the walk or ride itself.

5 *The arrival.* This should be only a concluding sentence.



From the picture by Nicolas Maes in the National Gallery] [*Photograph Mansell & Co.*

THE IDLE SERVANT

(The next lesson is based on this Class Picture, No. 157 in the portfolio)

10.—THE IDLE SERVANT

Oral Work

The children should refer to the Class Picture for the answers to these questions.

Which of the people is the Idle Servant?

What does the servant appear to be doing?

What do you think she should be doing?

In what room is she sitting?

Why are the pots and pans on the floor?

Name three of the things on the floor. (Colander, ladle, plate, dish, stewpan.)

What is the cat doing?

Who is the lady standing up?

What does she hold in her right hand?

Why, do you think, has she come into the kitchen?

What is the lady standing up showing to you?

What do you think she is saying?

What is the room at the back?

What are the people doing in it?

Describe the people in the back room.

What does one of the ladies wear round her neck?

Whose chair is pushed back?

Written Work

I. Imaginary conversation.

Let the children write the conversation which might take place between the Idle Servant and her mistress after the scene shown in the picture. Each child should give a name to the servant, and write the conversation in the form of a simple dialogue which might begin:

Mistress. Saskia! Wake up!

Servant. Oh, what a start you gave me!

The best dialogues may be performed by members of the class, with appropriate gestures.

II. Familiar proverbs and phrases.

Write on the blackboard:

(*a*) He looks as if butter would not melt in his mouth.

(*b*) Many hands make light work

(*c*) Too many cooks spoil the broth

(*d*) The pot calling the kettle black

(*e*) I wash my hands of the matter.

(*f*) There is not a pin to choose between them.

1. I have invited several friends to help me to carry the parcels, for ——.
2. It would be better to leave the work to one man, for ——.
3. It is a case of —— when May tells Harry he is noisy, for ——.
4. There is no harm in him, I am sure, ——.
5. I shall take no further steps to interfere, ——.

The children are to fill the gaps in the sentences with the appropriate proverbs. The correct answers are: 1(*b*), 2(*c*), 3(*d*) and (*f*); 4(*a*); 5(*e*).

III. Study of a quotation.

Write on the blackboard

"An idler is a watch that wants both hands,
As useless when it goes as when it stands."

Cowper. *Retirement.*

Explain to the children that *wants* in this instance means the same as *lacks* They are to explain the full meaning of the quotation in writing, giving examples if they wish.

IV. Letter writing.

Write on the blackboard:

Wanted: a young girl to do light work in the house and take out two children, aged seven and nine. Must be fond of children and a good walker

Let the children write a letter applying for this position. They might begin *Dear Madam, I am writing in reply to your advertisement in the "Daily Letter".*

The ending might be: *I am, Yours truly.*

V. Correcting errors.

Write on the blackboard·

1. You and me will go to football
2. He was going to fight and you was going to run away.
3. I seen her down the street
4. Mother whispered quiet into my ear, "Don't go!"
5. Nurse gave John and I the sandwiches
6. Philip is very different from Henry, for Philip is brave, while Henry is courageous

One word in each of these sentences is incorrect. The children must find the wrong words and write them correctly with the number of the sentence They need not rewrite the sentences

Story writing.—Read the following story through once in a natural voice and then let the children write their version of it This will be a good test of their ability to grasp the essential points of a story. Much interesting conversation can follow when the work is done.

HANDS IN PRAYER

One of the world's greatest painters was Albert Durer, who was born in Germany in 1471 Among his pictures is one which is especially famous It shows a pair of hands placed together as if in prayer. This is the story of how the picture came to be painted.

In the house where Durer lived at Nuremberg there was another artist, and the two men were friends. One day Durer went to pay his friend a visit, and found him sitting idle with an expression of deep sadness on his face "What is the matter, my friend?" asked Durer "I am sad because I know that I shall never be a great painter," replied the artist "I cannot paint pictures which all men will love to look at, as they love to see your pictures. I have tried as hard as I can, and I can never hope to be a great artist"

Albert Durer was silent for a moment, thinking how best to comfort his friend, for he knew that what he had said was true. Then he said, "My friend, I am going to ask a favour of you. It may be true that you cannot paint well, but you can pray well I have often watched your hands while you were praying, and have longed to paint them. If you will allow me to do so, then though men may never wish to see your pictures, yet they will love to look at your beautiful praying hands"

Durer's words were fulfilled, for to-day the picture of the "Hands in Prayer" is known and loved all over the world

11.—JOHN HALIFAX

Introduction

THE teacher should first explain to the children that the speaker in the "Reading" was an invalid boy, Phineas Fletcher, who met John Halifax when they were both sheltering from the rain. Phineas was in a Bath chair, while John Halifax was a ragged boy leaning against the wall of the shelter

The description of John Halifax serves as a model for the children's own efforts to describe people. The opening sentence of the detailed description of John Halifax stands at the end of the first paragraph The second paragraph deals with each feature in turn,—eyes, eyebrows, nose, lips and chin Remind the children of their Saxon forefathers and discuss their characteristics,—tall in stature, with blue eyes and fair hair. How many Saxons are there in the class? The third paragraph describes the general characteristics of the boy.

Discuss with the children the probable appearance of the speaker, Phineas Fletcher, a "poor puny wretch," as he describes himself in the "Reading." The passage also

supplies material for exercises on adjectives and verbs.

Reading

"He had scarcely stirred, but remained leaning against the wall—either through weariness, or in order to be out of our way. He took little or no notice of us, but kept his eyes fixed on the pavement—watching the eddying raindrops, which, each as it fell, threw up a little mist of spray. It was a serious, haggard face for a boy of only fourteen or so.

"Brown eyes, deep-sunken, with strongly marked brows, a nose like most other Saxon noses, nothing particular; lips well-shaped, lying one upon the other, firm and close; a square, sharply outlined, resolute chin, of that type which gives character and determination to the whole countenance and without which, in the fairest features, as in the best dispositions, one is always conscious of a certain want.

"As I have stated, in person the lad was tall and strongly built, and I, poor puny wretch! so reverenced physical strength. Everything in him seemed to indicate that which I had not: his muscular limbs, his square, broad shoulders, his healthy cheek, though it was sharp and thin—even his crisp curls of bright, thick hair

"'The rain will be over soon,' I said, but doubted if he heard me What could he be thinking of so intently?—a poor working lad, whom few would have given credit for thinking at all."

Mrs. Craik. *John Halifax, Gentleman.*

Oral Work

Think of other words for *stirred*, and *weariness*.

What is the meaning of *eddying*?

Have you seen drops of water from a tap each throw up "a little mist of spray"? What is a *spray*?

Which is the opening sentence in the description of the boy's face?

Are the faces of boys usually *serious* and *haggard*?

What colours have you seen in people's eyes? Which part of the eye is coloured?

Say the opposite of *deep-sunken*

The writer speaks of a *Saxon* nose,—what other names of this kind are used to describe the shape of a nose?

What adjectives are used to describe the boy's *lips*?

What adjectives are used to describe the boy's *chin*?

What feature gives character and determination to a face?

What is the meaning of *puny*?

Who is meant by the "poor puny wretch"?

What do we mean by *physical* strength? What do we mean by *mental* strength? What are physical exercises? What is mental arithmetic?

Why do you think the boy who is speaking "reverenced physical strength"?

What adjectives are used to describe the boy's *limbs*, *shoulders*, *cheek* and *hair*?

You are told that John Halifax's appearance indicated everything that the boy who is speaking had not. Find adjectives to describe the *limbs*, *shoulders*, *cheek* and *hair* of the boy who is speaking.

Written Work

I. Pairs of adjectives.

A. Write on the blackboard:

broad and square; firm and close, bright and thick; serious and haggard; sharp and thin; brown and deep-sunken, square and resolute.

1. Although he was only a boy, his face was —— —— ——.
2. His eyes were —— —— ——.
3. His lips lay one upon the other, —— —— ——
4. His chin was —— —— ——.
5. His shoulders were —— —— ——.
6. From want of food his cheek was —— —— ——
7. His hair was —— —— ——.

The children must fill the gaps with the appropriate pairs of adjectives given.

B. Write on the blackboard:

1. In winter the days are —— and ——.
2. In summer the days are —— and ——.
3. The over-fed dog was —— and ——
4. The starved donkey was —— and ——
5. A policeman is —— and ——.
6. William was —— and ——, for he had just finished a game of football.

The children must fill the gaps with appropriate pairs of adjectives. Care must be taken to see that each word selected expresses a distinct thought. We may say: The day was *wet and cold*, but not *wet and damp*.

II. Insertion of verbs.

A Write on the blackboard

reverenced, threw, stirred, doubted, remained, indicate, fixed.

1. He had scarcely —(1)—, but —(2)— leaning against the wall
2. He kept his eyes —(3)— on the pavement
3. Each raindrop, as it fell, —(4)— up a little mist of spray.
4. I, poor puny wretch! so —(5)— physical strength
5. Everything in him seemed to —(6)— that which I had not
6. I spoke, but —(7)— if he heard me.

The children must write the correct verbs with their numbers in a list. The sentences should not be rewritten.

B. Let the children write sentences of their own containing the verbs given in the list above.

III. Describing people.

1. Discuss with the children the probable appearance of the speaker, Phineas Fletcher. We are told in the "Reading" that he was just the opposite of John Halifax in appearance. From the word-picture given of John Halifax, let the children build up a description of Phineas,—a poor puny wretch, as he calls himself, confined to a Bath chair. A good plan would be to let them arrange their work in two paragraphs, beginning with an opening sentence which tells the chief point to notice about the boy. The first paragraph, like the second in the "Reading," may deal with the details of the features, and the next with the more general characteristics. The children may call their description, *Phineas Fletcher*.

2. Let each child describe his or her neighbour in the class, without mentioning names, arranging the work in the same orderly manner as suggested in 1

IV. Improving a disconnected account.

Write on the blackboard

He had on a coat The coat was made of that cloth they call "thunder and lightning" The coat had grown too short It was much too good to be thrown away. His waistcoat was of gosling green. His sisters had tied his hair with a broad black ribbon We all followed him several paces from the door. We all bawled after him, "Good luck! Good luck!" We bawled until we could see him no longer

The children must rewrite this passage to make it run more smoothly, using the joining words *and*, *but*, and *which*, and any others that are suitable.

12.—THE HORSES OF THE ANCIENT BRITONS

Introduction

BEFORE beginning the "Reading," it would be well to refresh the children's memories with a few questions about the Ancient Britons, and briefly to compare the civilisation of those wild tribes with life in England to-day It should be pointed out that man is the only creature who is able to profit by the experience gained through the centuries This important difference between man and an animal is brought out by Dickens in the "Reading," when he says that the horses

"can scarcely be said to have improved since, though the men are so much wiser."

"Horses" is a topic which is familiar and full of interest to every boy and girl, and opens a wide field for oral discussion, which may be conducted on the following lines. The horses referred to in the "Reading" were war horses, trained for military service only. Part of an English army to-day, the cavalry, employs war horses, but these are used chiefly for riding, since the various vehicles required are now drawn by motors Horses nowadays are used for hunting and racing, and, to some extent, for transport. The best-known kinds of horses still preserved for transport are the pit ponies and the cart horses. Near relatives of the horse are the mule and the zebra. Horses' equipment,—harness, saddles, nosebags, horseshoes,—will be familiar to the children, and they will all know something of the breaking-in, shoeing, stabling, feeding, watering and grooming of these animals.

Reading

"They were very fond of horses. The standard of Kent was the picture of a white horse They could break them in and manage them wonderfully well Indeed, the horses (of which they had an abundance, though they were rather small) were so well taught in those days, that they can scarcely be said to have improved since, though the men are so much wiser. They understood, and obeyed, every word of command; and would stand still by themselves, in all the din and noise of battle, while their masters went to fight on foot. The Britons could not have succeeded in their most remarkable art, without the aid of these sensible and trusty animals. The art I mean, is the construction and management of war chariots or cars, for which they have ever been celebrated in history Each of the best sort of these chariots, not quite breast high in front, and open at the back, contained one man to drive, and two or three others to fight—all standing up. The horses who drew them were so well trained that they would tear, at full gallop, over the most stony ways, and even through the woods; dashing down their master's enemies beneath their hoofs, and cutting them to pieces with the blades of swords, or scythes, which were fastened to the wheels, and stretched out beyond the car on each side, for that cruel purpose. In a moment, while at full speed, the horses would stop, at the driver's command The men would leap out, deal blows about them with their swords like hail, leap on the horses, on the pole, spring back into the chariots anyhow, and, as soon as they were safe, the horses tore away again "

Charles Dickens. *A Child's History of England.*

Oral Work

Who were the Ancient Britons?
What is a *standard* ?
Where is the county of Kent?
What is meant by *breaking in* horses?
Think of another word for *abundance.*
Have horses improved since the days of the Britons?
Have men improved since those days?
What is meant by the *construction* of a thing?
For what art have the Britons been celebrated?
Think of another word for *celebrated.*
Describe a British war chariot.
How many people did a chariot carry?
What is a *scythe*?
For what purpose is a scythe used nowadays?
What was the use of the scythes on the wheels?
Tell how the Britons used their chariots.

Written Work

I. Familiar proverbs and phrases.

Write on the blackboard.

(*a*) 'Tis a good horse that never stumbles.
(*b*) You can take a horse to the water but you cannot make him drink

(c) A dark horse
(d) To ride the high horse.
(e) Do not look a gift horse in the mouth.

1. We do not know who that clever-looking man is, he is ——.
2. Accept the present gratefully, and ——.
3. You must not desert our captain when he makes mistakes,——.
4. He is a proud man, he likes ——.
5. To send John to school does not make him learn his lessons, for ——.

The children are to fill the gaps in the sentences with the appropriate proverbs. The correct answers are: 1 (c), 2 (e); 3 (a), 4 (d), 5 (b) The children may afterwards explain in a few words the meanings of the proverbs and phrases.

II. Singular and Plural.

Write on the blackboard:

1. The horse was well taught.
2. He would stand still by himself
3. The man is wiser than the donkey
4. This cart is called a chariot.
5. He mowed down his enemy.
6. A scythe was fastened to the wheel
7. The man leaped out and dealt a blow.

The children must rewrite these sentences in the plural form.

III. Writing paragraphs.

This exercise should be preceded by an oral discussion on "Horses," conducted on the lines suggested in the Introduction to this chapter. The children should then write paragraphs, each about six sentences long, on one, or all, of the following topics

1. The horses of the Ancient Britons.
2. The war chariots of the Ancient Britons.
3. Horses in our streets to-day.

IV. Framing questions.

Write on the blackboard

1. I am feeling much better to-day, thank you
2. Three pints, please
3. The county of Kent is on the south-east coast of England.
4. He is called a groom
5. It is that part of an army which employs horses
6. No, the motor cars have taken their place in these times.

The children must frame questions to which these sentences are the answers

V. Describing familiar objects.

A Read aloud.

I am a piece of furniture made entirely of metal. I am chiefly black, though a little of me is polished brass. I am shaped like a high box. In the front I have two or more doors which open into cupboards supplied with trays. On the top of me a number of bars are fixed to lie side by side, with spaces between. I am joined to a long metal tube which passes into me and breaks up into other tubes These open by small holes in the cupboards and under the bars. No modern kitchen is complete without me.

The children must guess what this object is. (A gas cooker.)

B With the help of the class, choose a number of familiar objects which may be easily described. The names of the objects selected should be written on the blackboard,—a piano, a blackboard, a safe, a desk, a fireplace, are suitable. Let each child choose one of the objects and describe it in the same manner as in Exercise A, without mentioning names, beginning with the words, *I am* The descriptions may be read aloud to the class and the objects identified.

SCHOLARSHIP EXAMINATION PAPERS

BUCKS COUNTY EDUCATION COMMITTEE

1. Read the following passage carefully, and then answer the questions which follow

What marvellous power of flight the homing-pigeon has! When it is released, it goes round and round in ever-increasing circles, and gradually it rises in the air to a great height. At last it strikes off in the direction of its home, and often reaches its loft long before its master has returned by express train. Sometimes the birds are unable to find their course, but they generally manage to reach home after a few days' delay. A bird belonging to a Southampton sea-captain was once released from Jersey For fifteen months the bird was missing, and it was thought that it had lost its course and settled on an outward-bound vessel. This proved to be the case, and it was taken care of by one of the crew who, on returning to England, set it free from Plymouth When the bird reached home, it remained on the roof of the house, and refused to enter its loft for food At last, however, hearing its owner's voice, it flew down to its old place, and was quite at ease again

(*a*) What is said above to make you think the homing-pigeon flies very quickly?
(*b*) What at last caused the pigeon, on its return, to enter its loft?
(*c*) Tell in your own words what had happened to the missing bird between its leaving Jersey and its arrival at Southampton.
(*d*) Write the underlined words, and after each say what part of speech it is.

2. Divide the following sentences into their chief parts (subject, predicate, etc) —

(*a*) She thanked her old friend heartily.
(*b*) Into the valley of death rode the six hundred.

3. The sentences below are in the singular; change them into the plural.

Example—Singular. The dog barks.
Plural The dogs bark

(*a*) The baby often cries.
(*b*) A dwarf is a tiny man
(*c*) I am not a hero
(*d*) Was the child's toy broken?

4. Make a list of the unfinished words in the following, putting its number before each one (*Do not copy the rest of the sentences*)

(*a*) This morning I rec—(1)— a letter from my fa—(2)— who is spending a hol —(3)— with my mother at the seaside. It was a great su —(4)— to me, as I did not ex —(5)— to hear from him so soon.
(*b*) We p —(6)— a visit to this house, which was sit —(7)— in a qui —(8)— part of the town A large garden with high walls sep —(9)— it from the next house. In its rooms were many val —(10)— pictures.

5. Write the following with all the necessary stops, quotation marks, and capital letters:—

smike uttered a scream of pain when nicholas nickleby suddenly starting up cried stop who cried stop said squeers turning savagely round i said nicholas stepping forward this must not go on must not go on cried squeers no thundered nicholas

6. Composition. Choose *one* of the following subjects and try to write at least 20 lines about it —

(*a*) Milk.
(*b*) Christmas.
(*c*) An Adventure on a Bicycle.
(*d*) A crooked shilling tells what happened to it.

(e) Suppose you have an uncle in Canada who has never been to England Write a letter inviting him to pay you a visit and saying what you will do to make his stay a pleasant one

CHESHIRE EDUCATION COMMITTEE

1. Passage for Study.—*You will be allowed 20 minutes in which to read the following passage, and to learn as much as you can from it*

Breakfast at the Coaching Inn

There is the low dark wainscoted room hung with sporting prints, the hatstand by the door, the blazing fire with the quaint old glass over the mantelpiece, in which is stuck a large card with the list of the meets for the week of the county hounds, the table covered with the whitest of cloths and china, and bearing a pigeon-pie, ham, round of cold boiled beef cut from a mammoth ox, and the great loaf of household bread on a wooden trencher And here comes the stout head waiter, puffing under a tray of hot viands—kidneys and a steak, transparent rashers and poached eggs, buttered toast and muffins, coffee and tea, all smoking hot The table can never hold it all, the cold meats are removed to the sideboard—they were only put on for show and to give us an appetite. And now fall on, gentlemen all. It is a well-known sporting house and the breakfasts are famous. . . .

"Tea or coffee, sir?" says the head waiter, coming round to Tom.

"Coffee, please," says Tom, with his mouth full of muffin and kidney; coffee is a great treat to him, tea is not.

Tom has eaten kidney and pigeon-pie, and imbibed coffee, till his little skin is as tight as a drum; and then has the further pleasure of paying the head waiter out of his own purse, in a dignified manner, and walks out before the inn-door to see the horses put to. This is done leisurely and in a highly-finished manner by the ostlers as if they enjoyed not being hurried . "Now, sir, please," says the coachman; all the rest of the passengers are up, and the guard is locking the hind boot

"Let 'em go, Dick!" The ostlers fly back, drawing off the cloths from their glossy loins, and away we go through the market-place and down the High Street, while all the shop boys who are cleaning the windows, and housemaids who are doing the steps, stop and look pleased as we rattle past, as if it were part of their ordinary morning's amusement We clear the town and are well out in the hedgerows again as the clock strikes eight.

Adapted from *Tom Brown's Schooldays*

2. Questions on the passage set for study.—

(a) Describe the breakfast-room at the inn as the travellers saw it

(b) What food was on the table at first, and what hot food did the head waiter bring?

(c) What is the meaning of—(i) wainscoted room, (ii) sporting prints, (iii) wooden trencher, (iv) hot viands?

(d) Use the following words, each in a sentence of your own, to show that you understand their meaning — *mammoth, transparent, imbibed, glossy.*

(e) What do you understand by—

(i) to see the horses put to,
(ii) locking the hind boot?

3. Write about 30 lines on *one only* of the following —

(a) Suppose that you are a fox which has just escaped from the hounds after a hard run Describe your adventures from the time that you first heard the hounds

(b) *For Boys*—Why I enjoy being a Boy Scout

For Girls—Why I enjoy being a Girl Guide.

(c) Give an account of your favourite game, describing how it is played and giving the important rules
(d) Which of our domestic animals is the most useful? Give reasons for your answer.
(e) Tell any story you know about *one only* of the following —Drake, Nelson, Joan of Arc, Florence Nightingale, Grace Darling.

4. Write out the following, supplying suitable words for the blank spaces:—

(a) John was thrifty, hardworking, and refined, but his brother was altogether different, being . . . , . . . , and . . .
(b) The sun rose . and . . In the trees the birds sang . . , and beneath his feet the little stream . . . over the stones as if . at the beauty of the morning.

5. Form four nouns from the following adjectives and use each noun in a sentence of your own —*wise, pure, strong, weak*

6. The following sentences all contain common mistakes Rewrite them correctly:—

(a) The ship sunk slowly by the bows
(b) In China they do not speak like us
(c) Every one of us were sorry to go

7. What is meant by each of the following common sayings?—

(a) Keeping the wolf from the door
(b) Riding the high horse
(c) Pouring oil on troubled waters.

Use each in a sentence to show the meaning.

8. Write *six* sentences—(*two* for each word)—showing that each of the following words can be used both as a noun and as a verb,—*shout, run, heat*

EDINBURGH CORPORATION EDUCATION COMMITTEE

1. Composition.—

(a) Your mother has been away from home for a week Write a letter to her, telling what has happened in her absence
(b) Imagine you are an elephant in the Zoo Describe your life there
(c) *Write descriptions of the following people Do as many as you can in the time you have*—
A Boy Scout, a Tramp, a Nurse, a Railway Guard
(d) Tell some incident or incidents connected with the life of Mary, Queen of Scots, or Robert the Bruce.
(e) *Write an essay on*—
The Dangers of the Road—Past and Present.

2. Dictation.—*The whole passage is to be read through once, and then dictated as marked Punctuation is to be given*

Joan of Arc was the daughter—of a humble peasant—who tilled—his own little piece of land—in a small village—in France.—There Joan was born—and brought up,—or rather grew up,—for she did not get—much education —We are told—that she never learned—to read or write;—but her mother—had taught her—to say her prayers,—to spin,—and to sew,—and her days were spent—in these occupations —Well and earnestly—she fulfilled—these tasks —Above the other maidens—she was distinguished—for her diligence,—her strength—and her energy —As she grew up,—she became silent—and dreamy,—and loved to steal away—from her companions—to the little church—and kneel—in prayer alone

3. Write out fully the subordinate clause in each of the following sentences, and state its kind and relation —

(a) The man refused to tell us why he bought the house

(*b*) The pictures you saw in my shop yesterday have been sold.
(*c*) As the angler was hauling in the fish, his line snapped

4.
(*a*) Give a particular analysis of—
With great difficulty Peter followed the trail of the wounded bear for several hours
(*b*) Give the case and case relation of—
Difficulty, Peter, hours
(*c*) Pick out the prepositions

5.
(*a*) Write down all the feminine words in the following list —
table, mare, she, him, proprietrix, duchess, sergeant, matron, happiness, vixen.
(*b*) Give the plurals of—
potato, half, monkey, man-of-war, fox, lady, pipe, I am tired

6. Write out the following sentence, with correct punctuation, in the form of a letter to your cousin —

I shall be glad to see you at our house on Friday evening

7. Make sentences each containing one of the following phrases so as to show the meaning of the phrase —

(*a*) a fascinating hobby,
(*b*) in the height of fashion,
(*c*) a magnificent display,
(*d*) undaunted by his defeat.

ESSEX EDUCATION COMMITTEE

1. Write an essay on *one* of the following subjects —

(*a*) The best hour of the day
(*b*) An experience of the recent floods This may be real or imaginary
(*c*) Hay-making.
(*d*) The Lord Mayor's Show

2. Without using either of the words *an* or *but*, make each of the following groups of sentences into *one* sentence —

(*a*) I was walking along a road The road leads to my house. I met a beggar The beggar asked me for some money.
(*b*) The castle stands on the top of the hill. The hill is high The castle is ancient It is ruined It is far away.

3. Read the following sentences carefully and afterwards write *single words* which might be put in the place of the words underlined. You need not copy out the sentences, but give (*a*), (*b*), etc.:—

(*a*) The 'bus slipped sideways across the road and hit the lamp-post
(*b*) The traveller gave the porter a few coins for helping with his luggage
(*c*) The poor child was found wearing no clothes at all in the garret
(*d*) The prices of the goods had been made less than they were before.
(*e*) There was a notice saying that smoking was not to be allowed in the garage
(*f*) They were praised for their love of their country.
(*g*) The missionary found that they were people who ate human beings.
(*h*) The flowers were not real, but made of paper
(*i*) The island was one where not a living person could be found.
(*j*) In Arabia the amount of rain that falls is small.

4. Rewrite the following paragraph as though you were describing the events happening to another person or persons Start off "His ice axe, etc " —

"My ice axe jumped in my hand and I thought the steel felt hot through my woollen glove—was that possible? I didn't take off my glove to see Before we knew where we were the rock flashed again. I think it attracted the lightning We didn't stop to

discuss this, but tumbled down the mountain as fast as we could."

5. The following phrases show a word used with three different meanings:—

The bow of a violin
The arrow and the bow
Tying a bow.

Choose three words from the list below and write three phrases for *each* in a similar manner:—

match, trunk, air, course, file, order.

THE CORPORATION OF GLASGOW

1. Composition.—Write a composition of about a page on any *one* of the following subjects.—

(*a*) Write all you know about the employment you would like to have when you leave school. Give reasons for your choice
(*b*) A cat or dog wanders into a school Let it tell its experiences in its own words.
(*c*) Your sister lives in Edinburgh. Write a letter to her, describing the tramcar accident to your Aunt Mary, her infirmary experiences and her recovery
(*d*) Describe a Happy Day in your life.

2. Dictation.—The whole passage should first be read to the pupils, then slowly dictated in short phrases as marked, and the punctuation given. In the correction of the papers, a word that has been altered is to be counted an error Two marks are to be deducted for each error.

The words for the Spelling Test should be given immediately after the Dictation passage, and each word should be pronounced twice. Only one mark is to be deducted for each error in the Spelling Test.

During the rainy season/in India,/there frequently comes/a perfect deluge,/which may be accompanied/by strong gusts of wind/and by thunderstorms / Travelling at such times/is far from pleasant./ The roads are muddy,/every stream/becomes a torrent,/ and the low valleys/are flooded/by the rising rivers / Native houses/suffer at such times,/and are generally swamped/between June and September / After this,/the sun is in the south/at noon,/and the cool season/ begins / Even then, however,/it is much hotter/than we at home /ever experience. /

Words for Spelling Test—(The words must be read in a phrase or sentence.)

delicious, healthy, device, skilful, companion.

3. Analyse the following sentence —

As the weather had now improved, our little party gladly assembled at a spot near which ran a sparkling burn.

4. Parse the words underlined in Question 3 —

weather, gladly, assembled, which.

5. Make a noun from *wise*.
Make an adjective from *noise*.
Make a verb from *sweet*.
Give the opposite of *arrive*.
Give the feminine of *hero*.

6. Read this poem and answer the questions which follow —

Here's the Christmas ship from the Land of Dreams,
And a Captain that all of us know,
With a gown of red, and a beard of white,
And a ring, ting, ting and a tang-o!

The big ship has come through the Fairy Seas,
On a grey day in December.
The grown up folks may forget her name,
But the wee folks all remember!

The big ship is packed with the finest toys,
And the hold is filled with holly.
Smiles play about in the Captain's eyes,
And his cheeks are round and jolly

The Captain goes into every house,
But you'll never hear him knocking.
You'll only know that he's been and gone
By the things left in your stocking

Questions —

(a) Give a title to this poem
(b) Who is the Captain that all of us know?
(c) When does the big ship come?
(d) What does this ship bring as cargo?
(e) Who may forget the Captain's name?
(f) How do you know that the Captain has been to your house?
(g) How was the Captain dressed?
(h) Give any reason why smiles play about the Captain's eyes

KENT EDUCATION COMMITTEE

1. Read the following poem at least twice:—

"Then downward he began to wend,
And 'twixt the flowery hedges sweet
He heard the hook smite down the wheat,
And murmur of the unseen folk;
But when he reached the stream that broke
The golden plain, but leisurely
He passed the bridge; for he could see
The masters of that ripening realm,
Cast down beneath an ancient elm
Upon a little strip of grass,
From hand to hand the pitcher pass;
While on the turf beside them lay
The ashen-handled sickles grey,
The matters of their cheer between
Slices of white cheese, specked with green,
And green-striped onions and ryebread,
And summer apples faintly red,
Even beneath the crimson skin;
And yellow grapes, well ripe and thin
Plucked from the cottage gable-end."

Now answer the following questions —

(a) Write down a suitable title to the poem
(b) How can you tell what season of the year is described?
(c) What reasons can you find in the poem for thinking that the scene is not in England?
(d) Write about 5 lines, describing in your own words what the traveller saw from the bridge
(e) What colours are mentioned in the poem and what object does each describe?

2. Write down questions to which the following are answers.—

(a) Because I had a bad cold
(b) Brown, please.
(c) I should like to, but I cannot ride a bicycle.
(d) I have not seen him for six months
(e) He is three years older than I am.

3. Carefully read through the following story and then finish the story in about 10 to 15 lines

It was a beautiful summer day. Jack and Ethel set out in the morning, taking their food with them, for a picnic They walked a long way over the hills, further than they had ever been before, and sat down to have their lunch by a little stream.

Suddenly Jack noticed that the sun was no longer shining, and in a very few minutes a black cloud covered the sky. "It's going to rain," he said "Where can we go?" "Let's try the little building over there." They ran as fast as they could and just reached the building before the rain began.

They found it was an old ruin, but in one part of it they could shelter from the pouring rain. It was a terrific thunderstorm. They stood and watched the lightning For a long time neither of them spoke, but they were both a little bit frightened Suddenly Ethel exclaimed "What is that?" "What is what?" said Jack "That noise" "I haven't heard any noise" "Oh! there it is again, it's over in that dark corner I wonder what it can be!" . . .

4. Composition.—Choose *one* of the following —

(*a*) Suppose that you were given a little room of your own, and could choose the furniture for it Describe the furniture and say how you would arrange it.

(*b*) You are invited to a fancy dress party Say what character you would choose, and describe fully how you would dress up for it.

(*c*) Suppose that you were going on a picnic to make your own tea Name the articles you would take, and describe how you would build your fireplace, and make your fire

LEICESTERSHIRE COUNTY COUNCIL

1. *Read carefully the following statement.*—

About noon, we lay down in a thick bush of heather to sleep Alan took the first watch; and it seemed to me I had scarce closed my eyes before I was shaken up to take the second. We had no clock to go by: and Alan stuck a sprig of heather in the ground to serve instead, so that as soon as the shadow of the bush should fall so far to the East, I might know to rouse him

But I was by this time so weary that I could have slept twelve hours at a stretch; I had the taste of sleep in my throat; the hot smell of heather, and the drone of wild bees were like possets to me, and every now and again I would give a jump and find I had been dozing.

The last time I woke, I seemed to come back from farther away, and thought the sun had taken a great start in the heavens I looked at the sprig of heather and at that I could have cried aloud, for I saw I had betrayed my trust.

My head was nearly turned with fear and shame, and at what I saw, when I looked around me on the moor, my heart was like dying in my body For sure enough a body of horse soldiers had come down during my sleep, and were drawing near to us from the South-east, spread out in the shape of a fan, and riding their horses to and fro in the deep parts of the heather

Now answer the following questions:—

(*a*) Mention *all* the parts in the above statement which tell you that the man telling the story was very tired.

(*b*) Why was his "head nearly turned with fear and shame"?

(*c*) How did the "sprig of heather stuck in the ground" serve instead of a clock?

(*d*) Explain: "Alan took the first watch": "twelve hours at a stretch."

(*e*) From the sentence which begins "Alan took the first watch . . . ." write down the following words and say what part of speech each word is:—
took—first—me—scarce—eyes

2. *Analyse the two following sentences* —

(*a*) "A body of horse soldiers had come down during my sleep"

(*b*) "The woman carried a basket in her hand to the market square."

3. *The words in the group below all have a similar meaning* —

great
enormous
immense

Now arrange in your answer book the following words in three groups, so that the words in each group have similar meanings:—

fight, pray, plead, funny, battle, comical, beseech, combat, conflict, droll, implore.

4. *The following is a list of well-known poems Tell very briefly the story of any ONE of these poems, and write down, if you can, about TEN lines of it from memory*:—

Hiawatha
The Pied Piper of Hamelin
The Jackdaw of Rheims
Lord Ullin's Daughter
The Lay of the Last Minstrel.

The King's Breakfast.
The Ballad of Robin Hood.
Horatius.
The Revenge.
John Gilpin
The Ancient Mariner
The Highwayman
The Lady of Shalott.

If you have NOT read any of the above poems, tell the story and write TEN lines of any other poem you know

5. Composition.—

PART I—*Describe carefully and shortly ONE of the following* —

(*a*) A ladder
(*b*) A cushion
(*c*) How to make a bed
(*d*) How to tie up a parcel
(*e*) The difference between a window and a mirror.
(*f*) The difference between a chair and a bench.

PART II—*Write on ONE of the following subjects* —

(*a*) Write a short account of any match, concert, or entertainment at which you have been present
(*b*) A boy in a foreign country is writing a letter to you telling you what his country is like Imagine you are the foreign boy, and write his letter for him, saying what country the letter is from.
(*c*) As I was walking along the street, I saw the three following placards outside a shop window, all telling me something about the same event —
 (i) Crowds hold up Leicester traffic
 (ii) Marvellous escape of young child.
 (iii) Wonderful heroism of Leicester girl
 Can you write the story of what you think might have happened?
(*d*) Tell the story of any heroic man or woman in the Old Testament.

LONDON COUNTY COUNCIL

(Preliminary Examination for Junior County Scholarships)

1. Write on one of the following —

(*a*) Fun in the snow
(*b*) How the policeman controls the traffic of the streets.
(*c*) A greengrocer's shop

2. Read the following:—

Old Tubal Cain was a man of might
 In the days when the Earth was young,
By the fierce red light of his furnace bright
 The strokes of his hammer rung,
And he lifted high his brawny hand
 On the iron glowing clear,
Till the sparks rushed out in scarlet showers
 As he fashioned the sword and spear.

Explain the meanings of the words and phrases underlined.

3. Write sentences to show different meanings of —*roll, score, shed.*

4. Use the following in sentences (one sentence for each word) —*as, because, since, while*

5. Make lists of as many words as you can which begin with —*out* (such as *out*stay), *re* (such as *re*turn), *with* (such as *with*stand).

(Final Examination for Junior County Scholarships)

1. Write about one of the following —

(*a*) Leather and its Uses
(*b*) The Duties of a School Captain

2. Write about one of the following —

(*c*) "Down, down they come—those fruitful stores!
 Those earth-rejoicing drops,
 A momentary deluge pours,
 Then thins, decreases, stops."
(*d*) A Journey to the Land of Make-believe
(*e*) An Indoor Game

3. *Read the following* —

I halted at a pleasant inn,
  As I my way was wending;
A golden apple was the sign
  From knotty bough depending

Mine host—it was an apple tree—
  He smilingly received me,
And spread his choicest, sweetest fruit,
  To strengthen and relieve me

Full many a little feathered guest
  Came through his branches springing,
They hopped and flew from spray to spray,
  Their notes of gladness singing.

Beneath his shade I laid me down,
  And slumber sweet possessed me;
The soft wind blowing through the leaves
  With whispers low caressed me

And when I rose, and would have paid
  My host, so open-hearted,
He only shook his lofty head,
  I blessed him and departed

Answer the following about what you have just read.—

(*a*) Write the words used in the passage to keep up the thought that the "pleasant inn" is a tree.
(*b*) Write in your own words—"wending," "mine host," "feathered guest," "from spray to spray," "caressed"
(*c*) At what season of the year was this traveller on his way?
(*d*) Describe briefly what the traveller actually did.
(*e*) Why did the writer of the passage use the word "depending" instead of the word "hanging"?
(*f*) Why did the writer use the phrase "slumber sweet" instead of the phrase "sweet slumber"?

4. Write sentences to show the use of the following words or phrases, use each word or phrase in a separate sentence·—

although,	as a consequence,
so that,	in spite of,
for the purpose of,	unless.

5. Point out as briefly as you can the chief differences between —

(*a*) a 'bus and a tram;
(*b*) a jug and a basin,
(*c*) a horse and a cow.

COUNTY OF NORTHUMBERLAND EDUCATION COMMITTEE

1.—*Read this story over very carefully before attempting to answer the questions that follow on the next page.*

Mother Reindeer's Tale

Mother Reindeer and her fawn Blackie travelled swiftly in search of the herd They had travelled some miles when a North West wind sprang up and the air became full of flying snow. Blackie had never seen a blizzard; he could not understand why they should be travelling right in the teeth of the gale. He was not yet old enough to realise that, as a reindeer's hair slants backwards, the cold is felt more if the wind strikes from behind

They travelled on through the blizzard. Then at last Mother Reindeer stopped, led the way to a sheltered glade and there they flung themselves down to rest and eat. Blackie now begged his mother to tell him the story of the taming of the first caribou.

"Ever so long ago on a fine summer day a great herd of wild caribou was browsing near the sea-shore far away towards the setting sun Since wolves did not usually bother the caribou in summer, and no hunters had been seen for some time, the herd felt quite safe and had no pickets to watch for enemies.

"In this herd there was a fawn called White Feet with white legs and white nose He was the first caribou to have white markings and they were all proud of him.

"This summer day, when the herd was grazing, with no pickets to watch, a large band of hungry wolves scented them and before the caribou knew of their approach

they rushed out upon them The terrified herd stampeded pell-mell into the icy water of the Arctic Ocean.

"White Feet and a band of six fawns had gone up on a hill to the right of the great herd They were thus cut off from the herd All the fawns except White Feet were very frightened and they began to "mill," or run round and round in a circle. White Feet at once took command and led them away up the side of a high ridge He was barely in time for he saw three huge grey wolves coming up the ridge There was not a moment to lose. Down from the ridge raced the fawns towards a little bay on the other side. When they were half way to the bay White Feet saw a hunter's skin tent between them and the bay. What were they to do? They had been taught to fear hunters almost as much as wolves But the wolves were gaining and White Feet knew he could never get his band of fawns to the water in time With a last desperate spurt of speed, just as the first wolf was about to seize the hindermost fawn, White Feet and his little band swerved to one side and burst into the big tent. The native hunter, who had been watching the race, sprang up and closed the tent flap behind them, then turned to kill the wolves. And that," said Mother Reindeer, "was how White Feet, the caribou fawn, and his little band were saved and tamed by man and became the founders of our great herd of reindeer."

Now answer these Questions about the story —

(*a*) From what direction were Mother Reindeer and Blackie travelling?
(*b*) In what direction was the sea-shore?
(*c*) Why should reindeer feel the wind more keenly when it was at their backs?
(*d*) How did the caribou guard against enemies?
(*e*) What is meant by *Milling*?
(*f*) Why did White Feet seek safety in the tent?

2. *The tiny children closed the pantry door behind them.*

(*a*) Write down the predicate of this sentence.
(*b*) If the sentence is re-written thus: *The tiny children will close the pantry door behind them*, what change has been made in the verb?
(*c*) Put one word instead of "*The tiny children.*" What part of speech is that word?
(*d*) Re-write the sentence adding a word showing *how* the children closed the pantry door. What part of speech is the word you have added?

3.

(*a*) Place the words *silently*, *generous* and *remain* in suitable sentences to show that you understand their meaning.
(*b*) Re-write the following three sentences putting in more suitable words than those underlined —
 (i) America was invented by Columbus.
 (ii) The pigeon was set at freedom.
 (iii) An umbrella will defend you from the rain.

4. Write not more than *twenty* lines about *one* of the following —

(*a*) Story of a little child lost in the street.
(*b*) The ploughing of a field.
(*c*) My money box.

COUNTY COUNCIL OF THE WEST RIDING OF YORKSHIRE

JUNIOR CANDIDATES

1. Write on *one only* of the following subjects —

(*a*) Write an account of any interesting event that took place in 1930.
(*b*) Imagine that you have just removed from the country to a town or from a town to the country and write a letter to a friend in your old home

telling all about your new one. Do not use your own name or address.
(c) Write a story called "Just in Time."

2. Write down the words (one for each space) which would correctly fill the spaces marked *a*, *b*, *c*, etc, in the following sentences. Label your words *a*, *b*, *c*, etc, but do not write out the sentences.

I . . . (*a*) . . . the bell loudly, but no one came to answer it.

The gipsy was . . (*b*) . . . on the steps of the caravan with a baby on her lap

The butcher from . . (*c*) . . . we buy our meat has six shops

We are . . (*d*) . . . French by a Frenchman at our school.

I was very tired, so I went upstairs to . . . (*e*) . . down on my bed

Neither of these books . . (*f*) . . . the one I asked for

I do not know the meaning of this word, I must look it up in the . . . (*g*) . . . .

A woman who makes men's clothes is called a . . . (*h*) . . . .

A woman who travels is called a . . . (*i*) . . . .

My father's sister is my aunt, my sister's son is my . . (*j*) . . . and my cousin Mary is my father's . . . (*k*) . . . .

The little girl looked very happy, her eyes shone like . . . (*l*) . . .

3. Explain the meaning of the following very carefully:—

(*a*) It's no use crying over spilt milk.
(*b*) The general thinks the major is very brave.
(*c*) The general, thinks the major, is very brave
(*d*) Give every man thine ear, but few thy voice!
(*e*) If all the year were playing holidays, To sport would be as tedious as to work

SENIOR CANDIDATES

1. Write on *one only* of the following subjects:—

(*a*) Write an account of any living person whom you admire.
(*b*) You live in England Your Uncle Joe who lives in Canada writes to you asking you to tell him what plans you have made for your future He suggests you should go and live with him when you are old enough. Write your reply. Do not use your own name or address
(*c*) Write a story about twins who looked exactly alike.

2. Combine the two sentences in each of the following pairs so that each pair makes a complete sentence You must not join the sentences with the word *and*, but you may use any other connecting words or change the order of the two sentences

Example—The two sentences "Send for the plumber" and "His shop is at the end of the street" could be combined to make the sentence "Send for the plumber whose shop is at the end of the street"

(*a*) This is the house My aunt lives in it.
(*b*) The master came into the room All the boys stood up.
(*c*) It was pouring We went for a walk.
(*d*) The boy did not speak He did not move
(*e*) You will not succeed. You work hard.
(*f*) He read He was too tired to keep his eyes open.

3. Give *one* word for each group of words *underlined* in the following sentences. Label your words *a*, *b*, *c*, *d*, *e*, *f*, but do not write out the sentences.—

(*a*) The examination has been put off to a later date
(*b*) The river was so increased beyond its ordinary size that it nearly burst its banks
(*c*) If we do not set out at once, we shall be late.
(*d*) I cannot give you anything for those coins; they are quite without value.

(e) When I go to the library, I consult the list of books before deciding what book I shall take out.

(f) The man had received such a hard blow that he lay for a time not knowing what was going on around him

4. Read the following story very carefully.—

After the Civil War and the beheading of King Charles, the statue of that monarch on horseback was taken down and sold to a cutler, who undertook to destroy it He immediately manufactured a large number of knives and forks with bronze handles, and people believed that they had been made from the statue They were bought up so quickly that the cutler soon made a fortune and gave up business. Soon after the Restoration it was proposed to erect a new statue to the memory of the unfortunate king On hearing of this, the cutler informed the Government that he could save them the trouble and cost of making a new statue, as the old one was still in his possession and he would sell it to them. The bargain was closed, and the statue, which he had preserved in secret, was again erected on the pedestal where it still stands.

Now answer the following questions —

(a) Write out the exact words the cutler used to the Government. Begin thus "I can save you the trouble . . ."

(b) Why were the people so eager to buy the knives and forks?

(c) Why did the cutler give up business?

(d) Who is spoken of as unfortunate and why is he called unfortunate?

(e) Write one sentence about the cutler's character

(f) Which of the following sayings do you think would make the best title for the above story?

Waste not, want not.
Two of a trade never agree
The villain of one age is the hero of another.
A bird in the hand is worth two in the bush.
Uneasy lies the head that wears a crown



THE STATUE OF KING CHARLES AT CHARING CROSS

FOURTH YEAR'S COURSE OF NEEDLEWORK



From the picture by Moroni in the National Gallery] [*Photograph: W F Mansell.*

THE TAILOR

SYLLABUS OF THE FOURTH YEAR'S WORK

Type of pattern.—Paper folding and the use of bought patterns.

Articles made.—Petticoats, knickers, simple dresses from a bought pattern, for children's wear

Making articles in order to learn the following processes —run and fell seam where required, setting a gathered or pleated skirt on to a yoke or bodice (modern method); crossway cutting, facing and binding with self or contrasting material, back opening in a child's dress

Stitches.—Adaptation of those already learnt, to new requirements The use of running, hemming and loop stitch for applying patches of colour according to design.

Materials.—Those previously used, also Tobralco, printed and check gingham and zephyr of good design, and printed winceyette and lawn Needles, size 7, and one strand of stranded cotton for the finer type of work

Knitting.—

1 Knitting on four needles.
2 Decreasing
3. Turning a heel
4 Finishing a flat toe

Articles such as an egg cosy, doll's or baby's bonnet, purse or bag to draw up.

Decoration.—Simple appliqué, using plain and figured material

INTRODUCTION

THE needlework of the preceding three years has consisted of a certain amount of the type of work calculated to give training in the processes which require accurate measurement, also in those which develop rhythm in stitching and facility in the powers of manipulation of tools and materials

During the last year in the junior school these aims are promoted by allowing the girls to have constant practice in the processes and stitches already learnt This practice is better than teaching a number of new stitches and processes which, it would seem, are generally taught mainly for the sake of teaching them. Nowadays, the actual number of stitches and processes used in everyday life is comparatively small What is needed in schools is to teach in the most desirable way the application of the few which are used This, however, is not done by making garments requiring the processes which the teacher feels must be taught, but by making garments of materials in general use, and by using in the making up of those garments the stitches and processes most suitable to the materials.

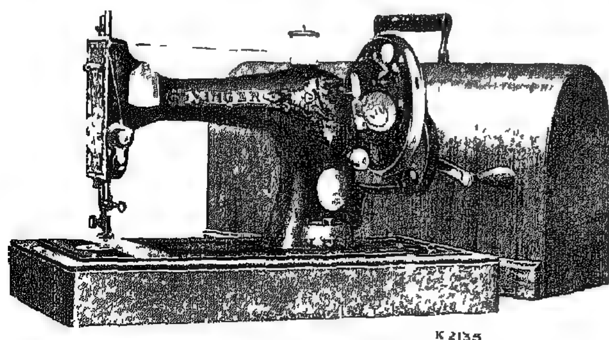
Very few modern undergarments are made of plain white cotton materials, there is, fortunately, greater latitude in the choice of materials. Formerly a run and fell seam was almost universally the method used for joining seams in cotton material. But with the printed and coloured fabrics now in vogue, it cannot be said that a run and fell seam is a suitable method of joining Where a flat seam is required, a machine fell seam is much more desirable, otherwise a French seam may be used It is very important,

therefore, that children should be trained to adapt and to apply suitable stitches and processes to the materials demanded by changing fashion.

So in the matter of seams, the children should learn that the width of a French seam changes according to the character of the material The French seam is better than a hand-made flat seam for material which demands the use of the sewing machine in order to obtain a neat finish

Sewing machines should be used during this last year in the junior school, for a girl ten years of age is old enough to manipulate one Ability to use a machine depends to some extent upon home circumstances, and whether a girl is encouraged by her mother to use the home machine Many children possess excellently made miniature sewing machines which they might be allowed to bring to needlework lessons Such machines are obtainable from the Singer Sewing Machine Co., Ltd, and are reasonably priced, practice obtained by using them forms an excellent foundation for future work

At least one hand machine should be provided for the school, its occasional use will give great encouragement and delight, and will tend to banish the feeling that there is a difference between school and home needlework



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TYPE OF MACHINE RECOMMENDED FOR CLASSROOM USE NUMBER 28K.

The use of patterns.—Pattern making and the use of bought patterns may be dealt with in the most natural manner, by letting the girls make their own pattern of a garment during the first term. Then they may use a bought pattern of a garment of similar type, in order that the underlying principles of construction in a drafted pattern may be realised as being present in a bought pattern

It is necessary for the teacher to explain fully and clearly the intricacies of pattern making, particularly now that half-patterns are being made. In order to do this, she must have for demonstration purposes a dress stand in a child's size, or she may have one of the members of the class constantly at her elbow in order to make clear the relation between the flat pattern and the body A small dress stand is not an expensive item, and would prove to be of great value in many ways It is often argued that machines, irons and dress stands should be confined to workrooms, and should not be used in schools, and particularly not in junior schools, but the fact remains that classrooms are workrooms, and therefore it is reasonable that classrooms should be equipped with the apparatus necessary for work of good quality

Materials.—There is a wide choice of materials for this year's use For the first term's garment—a petticoat—soft, thin, printed winceyette has been chosen, but if thinner garments are required, there are many printed and plain lawns and cambrics from which to choose.

Where winceyette is chosen, a thin texture is especially desirable owing to the fact that hand-made French seams will have to be used, and these will be very bulky unless the material is thin. For dresses and knickers almost any kind of cotton dress material of a non-fraying character may be chosen; reference

to the scheme of work for the year will provide a guide in choosing suitable materials These should be soft, but not loosely woven; they should be soft because the girls are not yet accustomed to using fine needles A No 7 sewing needle will be sufficiently fine for sewing with ease material like Tobralco; the stitches will sink into the fabric and the work will then present a flat appearance

Coloured sewing cotton in a large range of colours is now to be purchased in finer sizes than have hitherto been obtainable, cotton is preferable to mercerised thread as it has a duller effect, but such threads as Sylko, Sheen, etc, are all useful One strand of stranded cotton may be found quite good also, particularly when it is difficult to match colours, or only a small quantity of thread is needed.

Methods of work.—The ideal method of teaching through the year is undoubtedly the group method The teacher gives short demonstrations to a group of girls whenever the need arises This plan leaves the children free to work at their own pace and in their own way, experimenting where they desire to do so, and discussing their work with each other

The atmosphere produced by this type of work should be taken into consideration also There is a natural, friendly, busy feeling in the air, an attitude towards work and towards the teacher which is akin to that in a well-run workroom, where all are keen to complete the work in hand in a reasonable amount of time The fact that needlework periods are so short need prove no real barrier to arranging the work along these lines; it is not really necessary for the teacher to see every piece of work during every lesson

When demonstrations are given to groups, it is presumed that the majority will be occupied in completing the amount of work necessary before a fresh stage is reached, or that the children are engaged in making some other article which does not necessitate learning a new process At any rate, the teacher must be sure that all are fully occupied while the demonstration is in progress.

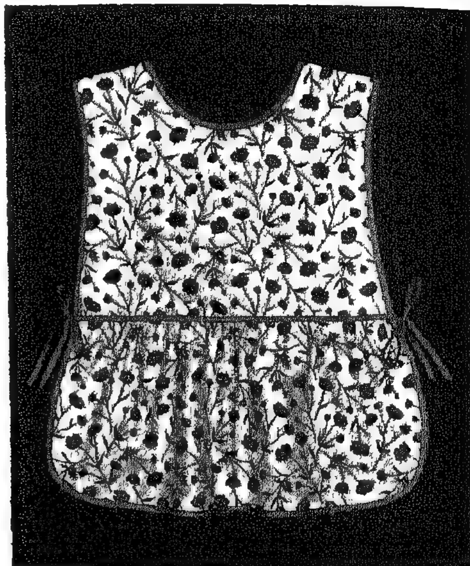
In order that full benefit may be derived from this type of teaching and work, it has been found desirable to allow the girls to follow the demonstration by working a sample of whatever has been explained and shown This is not to be confused with the old-fashioned "specimen," which was often worked entirely for its own sake and not as a means to an end. The working of a sample is the only means whereby practice is possible. No reasonable person using a sewing machine for the first time in her life would attempt to make a frock, naturally she would first practise machining Yet how often are children expected to show the utmost efficiency in working some difficult process on their garments, without any opportunity for practice beforehand!

When the sample of work has been passed by the teacher, the girls may be trusted to continue their work by themselves It will be evident to all who adopt this method of working that, firstly, it is an excellent method educationally, and secondly, that the quality of the work produced improves enormously The teacher's difficulty will be the lack of adequate space, for it is not very easy to turn an ordinary classroom into a workroom Where the building is re-organised, or new, probably a room exists well-equipped with chairs and tables for sewing The girls should be encouraged to sit round the table, rather than along one side It is difficult to give supervision when the teacher has to move about in the extremely small spaces between the children's desks.

When giving group demonstrations in the ordinary classroom, the teacher should be seated at a table, not at a high desk Not more than six girls should be watching her, a greater number tends to produce restlessness, particularly when they are unable to see properly. Teaching specimens of an

enlarged size are quite unnecessary for this kind of demonstration, a piece of work similar to that on which the class is engaged is sufficient, and seems more real to the girls The methods of giving class lessons have been fully described in the first three volumes of this work Therefore, the majority of the lessons given in detail in this volume will be of the nature just described above, in order to familiarise the teacher with the organisation necessary for group demonstrations and class work. In the case of pattern making and other processes which are certain to be needed by the whole class,







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DRESS, PINAFORE AND KNICKERS OF TOBRALCO, MADE BY MACHINE

teaching by class demonstration is the wisest plan. Details of the arrangement of such lessons will be given in the following pages.

Garments to be made.—These will almost certainly consist of undergarments, simply cut and made, either for smaller children or for the girls themselves. As, however, garments such as petticoats, knickers and simple dresses for children of all sizes are more or less standardised in shape and material, no rule need be laid down by the teacher. Indeed, it will tend to solve the problem of the saleability of garments if children are allowed to make them to individual requirements whenever possible

SUGGESTED COURSE OF LESSONS FOR THE FIRST TERM

LESSON 1.

Discussion of work.—Discussion on the garment to be made. The suggested garment is a simple petticoat of printed winceyette; as this is the autumn term the girls are likely to need garments of this nature for winter wear.

A finished petticoat should be shown, it consists of two pieces, a back and a front, joined at the sides and shoulders either by machine felled seams, or by French seams There is a hem of 2 in. at the foot; this hem has an inside turning of 1 in. in order that the garment may be let down a reasonable amount. The neck and armholes are finished on the wrong side by the application of bias binding in lawn, or other soft material There is an opening down the centre back, finished with a continuous strip, this will prove to be a useful method of making an opening.

Samples of materials should be shown during this period If the material is obtained locally, the girls will be able to bring it for themselves, thus allowing their parents to see exactly what the teacher wishes the girls to use In any case, the approximate cost of garments of various sizes should be stated for discussion at home Alternative methods of making up might also be discussed if time permits.

LESSON 2.

Making the pattern of a plain petticoat.—Class demonstration of making up the pattern of a plain petticoat Details of the arrangement of this lesson will be found on page 313

LESSON 3.

Continuation of pattern making.—Continuation of the making of a petticoat pattern When girls have constructed a pattern to their own measurements, these should be pinned up and tried on, the girls working in pairs. When patterns for smaller girls have been made, duplicate patterns might be cut, taken home and tried on the children for whom they have been designed.

LESSONS 4, 5 and 6.

Making a machine and fell seam.—Cutting out will probably last for three periods. During Lesson 4, a revision lesson on French seams might be given in order that the sewing may begin as soon as the cutting out is finished

Presumably a few girls will have small sewing machines or will know how to use the class machines, it is at this point that

a group demonstration becomes necessary. Details of a demonstration on "A machine and fell seam" are to be found on page 316.

LESSONS 7, 8, 9 and 10.

Neatening an opening.—These lessons will be devoted to joining the parts of the garment, by means of one or other of the seams already described. Any girls who finish the seams rather earlier than the majority may be shown how to make the continuous strip opening As time goes on, these girls will be able to help the slower workers, the teacher supervising. Details of a group lesson on "A continuous strip opening" will be found on page 318

LESSONS 11 and 12.

Making the opening at the back of the garment.

LESSON 13.

Bias binding.—The use of bias binding should be discussed during this period. It should be made clear to the girls that although bias binding is so easily obtainable in every sort of material and colour, care is necessary when buying it to make sure that:

1. The material of the binding is suitable as regards texture.
2. That the colour is fast.
3. That the card contains a sufficient length for the purpose of binding the whole garment

If possible, show several makes in various widths, including that sold by the yard A good plan would be to allow the girls to work out the cost of bought bias binding, and to compare with it the little cost of strips cut from odd pieces of material It will generally be found that *bought* binding is merely labour saving; but it should also be pointed out that when material for crossway strips has to be bought specially, ¼ yd of material is the smallest quantity which is at all useful

LESSON 14.

Crossway strips.—Cutting crossway strips and joining them into desired lengths for facing necks and armholes of petticoats As the girls will probably know how to do this, revision only should be necessary. While certain girls are busy cutting and joining strips, a group demonstration might be given to those who are to use bought binding.

LESSONS 15, 16, 17 and 18.

Continuation of crossway strips.—Continuation of practical work; facing the neck curve and armholes by means of crossway strips, which should be run on the right side and turned over and hemmed to the wrong side, ½ in below the edges The turnings must be snipped at distances 1 in. apart before being turned over.

LESSON 19.

Finishing off.—Finishing off the previous process, pressing the work with a warm iron.

LESSON 20.

Turning up a wide hem.—A class demonstration on "Turning up a wide hem, for the purpose of easy letting down" Details of the arrangement and organisation of this lesson will be found on page 319.

LESSONS 21 and 22.

Turning up the hem of the petticoat.

LESSON 23.

Loops and buttons.—Fastening the petticoat by means of blanket stitched loops, and ⅜ in linen buttons.

LESSON 24.

Finishing off.—Finishing off and pressing the garments Attaching labels showing the amount of material used, and the total cost

FOUR LESSONS IN DETAIL FOR THE FIRST TERM

MAKING THE PATTERN OF A PLAIN PETTICOAT

(Details and Demonstration of Lesson 2.)

PREPARATION

Previous knowledge—Making simple patterns by means of paper folding. Using bought patterns for doll's clothes. Simple measurement.

Aim.—To teach an easy method of making a petticoat pattern To show the relation of the construction lines and pattern lines to the human body. To give knowledge of a pattern.

Arrangement of lesson—The teacher will demonstrate first to the whole class, the scholars merely listening and watching, and then the teacher will give the demonstration once more to the class, the scholars working step by step with the teacher.

Teacher's requirements—Two blackboards and chalk, a 3 ft. ruler, and a dress stand, in a child's size if possible. A finished garment similar to that which is about to be made. A piece of cutting-out paper of exactly the correct size for the petticoat.

Children's requirements.—Pieces of rough paper, rectangular in shape, for making sketches Pieces of paper cut the exact sizes required by individuals. Pencils, rulers, tape measures, pins.

INTRODUCTION

Give the girls pieces of paper, rectangular in shape, upon which they may work roughly, and not to any particular scale The sketching should take place when the teacher is demonstrating the second time. The full-size pattern may be made independently of demonstration, the girls working from memory, or from their rough copies.

They will already have seen the garment which the teacher is using as a specimen petticoat, so that the shape of it will be familiar to them

Measuring each other will present some difficulty, but can be done at odd moments, and the measurements confirmed by the teacher. Measurements of smaller children must be, to a certain extent, taken on trust, as such measurements are usually brought from home. Two measurements only are required, both very simple, namely, the length of garment from shoulder to knee (approximately), and the bust measurement In many cases, however, the actual measurements should be used; and resort should not be made to proportionate sizes, unless no other measurements are available

The petticoat is placed on a dress stand, or hung up on a coat hanger, in a convenient position The teacher uses two blackboards, one for each part of her demonstration The girls will have seen the garment, and should have had some opportunity of examining it, so no further discussion need take place The shape of the petticoat and its relation to the pattern of any garment previously made are important points to be noted

The class should be questioned, in order to gain the following comparisons between the two shapes.—

1 Magyar garments are not shaped at the armhole, because the sleeve is part of the pattern and is not added The petticoat has a curved line at the armhole; if a sleeve be

needed, it will have to be added. There is also a shoulder line.

2. On this account Magyar garments fit loosely round the armhole and bust The petticoat fits more closely because of the curved armhole, also because the shoulder line lies along the shoulder of the body, and does not hang down from it In order to make this shaping, it is necessary to add only one or two more lines to the top part of the Magyar pattern. The teacher might show this, by drawing upon the board a sketch of a Magyar pattern, and then, using coloured chalk, show how the necessary shaping is made, thus cutting away the sleeve and part of the shoulder

2 That *any* 2 divisions together measure the requisite amount, i e, 7 in., which is equal to ¼ bust measurement. Therefore the two pieces of paper together will measure 14 in, or half the bust measurement, if the pattern is drawn between any 2 divisions

3 That by cutting the paper as wide as the whole bust measurement plenty of room is left for shaping

The dress stand should here be used for demonstration purposes Where the stand is not available, the teacher should use a child instead, and show the relation between the cut paper and the creases upon it to the body of the child This is important.

DEMONSTRATION

The pattern to be made should then be shown to the class in the following manner

1 Cut a piece of plain paper equal to the required length of the garment from the shoulder, i.e, 36 in., and equal in width to the bust measurement, i.e, 28 in

2. Fold the paper in half lengthways, and pin it upon a board, keeping the fold to the left hand, and the cut edges to the right hand.

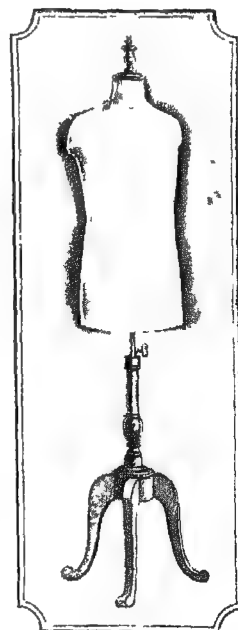
3 Fold again, twice, to make 4 divisions and 3 creases on the double paper

4. Open out to the first position, taking care not to move the folded edge from the left hand

5 In order to obtain the position for the armhole, crease the top part of the paper across, at ¼ bust measurement down, and open it out again

Note At this stage the class should be questioned in order to ascertain that everyone knows the following facts.—

1 That the pattern produced will be in 2 pieces only, a half back, and a half front.



[Photograph supplied by courtesy of the French Bust Company, Ltd

TYPE OF DRESS STAND RECOMMENDED FOR CLASSROOM USE

To make the necessary shaping, proceed as follows —

1. *Front neck* —At 2 divisions in from the fold mark a point. At 1½ divisions down,

and 1 division in, mark another point Curve between these two points

2. *Shoulder line*—At 1 division in and ½ a division down mark a point, and from it draw a line to touch the neck line

3. *Armhole curve*—At ⅝ division in from the cut edges on the bust line, and ½ a division up, mark a point. Curve from the shoulder to this point, making a fairly deep curve

4 *Side seam.*—Join by a slanting line, from the armhole to the lower right-hand corner of the paper. This line could be shaped by folding the paper from the armhole to the corner, thus marking the line by a crease.

5 *Back neck*—At 2 divisions in from the fold (i e, the point where the front neck began), and 1 division down, draw a curve.

6 *Back fold.*—From the neck curve draw straight down the crease at 1 division in

7 *Front fold.*—As children often stand in such a position that the abdomen is prominent, it is wise to draw a sloping line from the front neck curve to ½ a division in at the lower right-hand corner.

8. *The hem line*—This will need to be slightly curved upwards at the sides to prevent the garment from drooping at the side seams To curve, measure the centre back line from the bust line to the edge of the paper; measure from the bust line along the underarm seam line, making it the exact length of the centre back line. It will generally be found that the side line requires shortening by about ¾ in to ½ in Curve from the fold to the side seam

The first demonstration aimed only at being explanatory, and was intended to give a sense of reality, while the girls watched and listened. At the second demonstration the girls should make small patterns on the pieces of paper provided, working step by step with the teacher

The results of the first demonstration should remain pinned upon the board, to be referred to occasionally when giving the subsequent working demonstration

The girls should then be allowed to work by themselves when making the full-size pattern of either their own, or other children's petticoats. The teacher will supervise the pattern making, helping and correcting where necessary

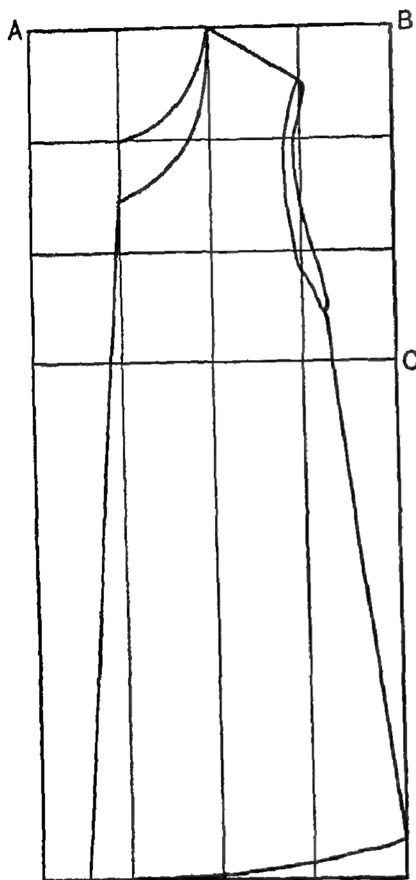
There are alternative methods of making up this garment; the fastening might be required at the shoulder, in which case no alteration would be necessary when making the pattern

Some people prefer to have the back of the petticoat cut wider, and to make an opening known as the "equal hems" opening, this gives a greater width to the skirt and allows more freedom of movement. In this case, alter the back of the draft as follows —

1 Produce the back neck line out to halfway between the two first divisions

2. From this point, draw down a line parallel to the line at the fold of the paper, to meet the front fold line, at the knee line.

This is still placed to a fold of material when cutting out, but is slit down to the required length, and half inch hems are then made upon either side of the slit, the skirt will be pleated at the base of the opening Several other ways, both of cutting the pattern and of making up the garment, will suggest themselves to the teacher and possibly to the children, who should be encouraged to try different ways for themselves



PATTERN OF A PLAIN PETTICOAT

The measurements for a plain petticoat are as follows:

Length = 36 in. Bust = 28 in

Cut paper = length × bust.

Fold in half then in four *lengthwise.*

Fold across at ¼ bust down and that division into 3 across

Mark the letters, A, B, C.

Front neck = 2 divisions in from A; 1½ divisions down on first division in curve.

Front fold = slant line from neck to ½ division in at knee line.

Shoulder = 1 division in from B and ½ division down

Armhole = ⅔ division in from C and ½ division up.

Curve to shoulder. Slope to extreme right-hand corner.

Back neck = 2 divisions in from A, 1 division down from curve

Back fold = straight line down, i e 1 division in from A

Back armhole = less deep curve.

Measure distance from bust line to obtain curve at knee.

MAKING A MACHINE AND FELL SEAM

(Details of a Group Demonstration on Lessons 4, 5 and 6)

INTRODUCTION

No special apparatus is necessary for this type of demonstration; the teacher will use 2 pieces of material similar to that which the girls are using, and of a sufficiently large size to be seen by a group of about six girls. A sewing machine will be required, either a toy machine brought to school by one of the girls, or one provided by the authorities for school use.

The teacher must sit at a table in such a position that her movements are seen by the group of girls who should stand on either side of her.

She will then show the girls how to make the seam, which should be of normal width, explaining the process while the manipulations are in progress.

PRESENTATION

To make the seam:—

1 Pin the garment together ½ in. below the raw edges

2. Tack the edges together to make a straight line, along the line of pins

3 Remove the pins, and machine along the tacking line.

When a toy machine is being used, the stitch produced will be chain stitch The girls should be reminded that this stitch must be made secure by threading through a needle the end of cotton left by the machining, and making one or two back stitches, over the last machine stitch made.

4. Remove the tacking thread, and cut away half the amount of turning above the machining, on the back of the garment only, thus leaving a projecting raw edge of $\frac{1}{4}$ in., and one of $\frac{1}{2}$ in The latter will become the felled edge, and should be turned down on to the back of the garment.

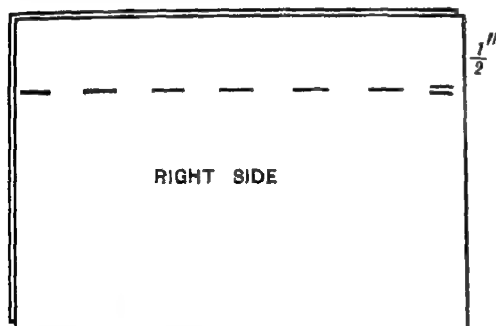
5 Turn the work, so that the front (with the wide projecting edge) is towards the worker, and, measuring carefully, tack the wide raw edge over the narrow one away from the worker, to make a projecting edge of $\frac{1}{4}$ in. above the machining The tacking should be worked through three thicknesses of material

6 Flatten this edge down on to the back of the garment, and secure it by small tacking stitches This time the tacking must be taken through four thicknesses of material.

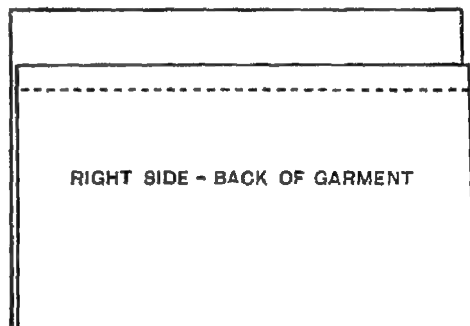
7 Machine through all thicknesses as close to the edge as possible.

This seam is generally worked on the right side of a garment for two reasons:—

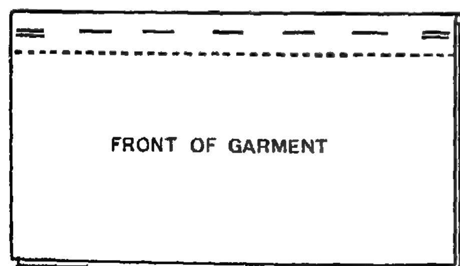
(*a*) The seam is less flat on the side on which the last machining is worked.



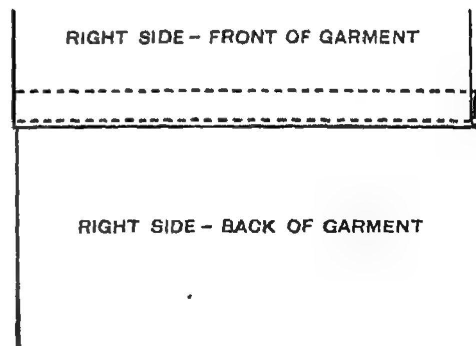
Section of demonstration material showing tacking $\frac{1}{2}$ inch from edges



Back edges cut to $\frac{1}{4}$ inch after machining



Material turned over and seam tacked



Finished appearance of seam

MAKING A MACHINE AND FELL SEAM

(b) The appearance of 2 rows of machining gives a more finished effect to the outside of a garment

When teaching any process involving machining, the teacher should make a special point of the details of beginning the stitching—e g., the gradual insertion of the needle and the smooth turning of the handle, etc One group of girls having been shown the making of the seam, another group takes their place and the previous group practises the seam on an odd piece of material, before attempting to use it on the garment.

NEATENING AN OPENING BY MEANS OF A CONTINUOUS STRIP

(Details of a Group Demonstration of Lessons 7, 8, 9 and 10.)

INTRODUCTION

Several girls will have reached a stage beyond that of the majority of the pupils, and it will become necessary for the teacher to provide instruction in the method of making an opening in the back of the garment.

A group of girls will watch the demonstration for which ordinary cutting-out paper will suffice as teaching apparatus Size of paper = 18 in. by 10 in.

PRESENTATION

Method of making the opening —

1 Cut down the centre back of the garment to the depth of 12 in This will give a sufficiently large opening to enable the garment to be slipped on and off easily. An opening in any garment should always be somewhat larger than the circumference of the head

2. The neatening of this opening is very simple. It consists of binding the raw edges of the slit with a strip of material, which is cut twice as long as the opening, and twice as wide as is required, plus the necessary turnings In this case, the strip will have to be the length of the slit × 2 = 24 in by 1½ in, which will produce a bind of ½ in when finished, and is cut to the selvedge thread. In a larger garment, the bind could be cut correspondingly wider

When neatening a short, front-neck opening the bind could be cut on the cross, and be much narrower in width

3 Pin the right side of the strip to the right side of the garment, for the whole length of the opened-out slit, taking ¼ in. turning along the edge of the strip, but starting and ending with ¼ in turning at the neck of the garment

The turning on the garment is graduated in width, and at the centre (or the base of the slit) it is no wider than approximately





RIGHT SIDE
Strip run on to garment



WRONG SIDE
Appearance on wrong side

NEATENING AN OPENING BY MEANS OF A CONTINUOUS STRIP

two threads This arrangement will obviate the necessity for making a pleat in the garment, and will give a flatter effect

4. Run the strip to the garment, making about five back stitches at each side of the centre, where the weakest part of the opening will come

5 Turn the work to the wrong side (or inside) and press the turnings of strip and garment, upwards on to the strip, tacking if necessary

6. Tack the turning at the other edge of the strip to hold it firmly, and pin it over to the garment, so that the folded edge of the strip lies just over the previous running stitches Pin the edge in place, putting the pins in an upright position, and about $1\frac{1}{2}$ in apart, starting from the centre and working away from it towards the neck.

7. Hem the strip in place on the wrong side, taking care to see that no *dragging* is caused.

8 Remove the tacking threads and press flatly.

9. Arrange the strip so that the left-hand side projects, and the right-hand side folds back on to the garment.

Back-stitch across at the base of the opening and at the neck to hold the right-hand side in position

The opening is completed by the finishing of the neck, by working 2 loops and by sewing on 2 buttons

When the teacher has completed the demonstration each girl should make a specimen opening in paper for practice purposes, when this has been approved, the openings on the petticoat may be made, the teacher supervising the work

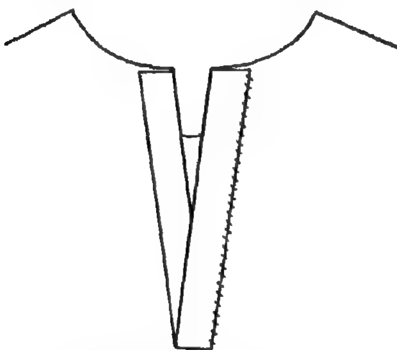
Buttonholed loops may be shown in the same way, and worked upon the garments only after the teacher has approved those practised by the girls. It should be noted that the practice pieces are not specimens, and should not be kept by the girls unless they wish to possess them for future reference The practice pieces are merely a means of trying out a process, the nature of which demands repeated effort before a good result can be attained.

TURNING UP A WIDE HEM

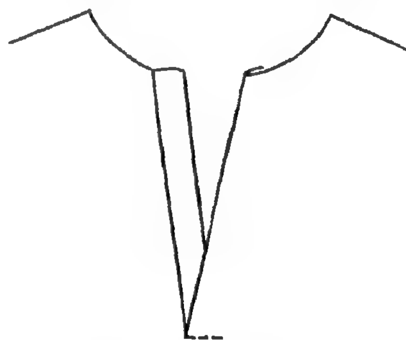
(Details and Demonstration of Lesson 20.)

INTRODUCTION

It will doubtless be found convenient to revise the turning up of hems. While this



Finished Appearance
Wrong Side



Finished Appearance
Right Side

NEATENING AN OPENING

is a comparatively simple process which most girls would attempt without a great deal of thought, the teacher should draw the attention of the class to the following method of turning up a hem. It is one which will, in practice, give the most accurate results, although the average girl will think the method is laborious However, the certain neatness and finish that this method produces is likely to be quickly seen by any observant girl.

The girls, having turned up hems varying in width from ½ in to 1 in. or 1½ in., with inside turnings of ¼ in, will know something of the method of doing this. Certainly they will know that the first, or inside turning, is better tacked down, particularly on springy materials, and when curves are being manipulated. The class can be questioned about turning hems, and thus the lesson becomes a revision lesson, which aims at showing the girls how to adapt their present knowledge to new circumstances, i.e., the turning up a wider hem with a wider inner turning. The wider turnings are made because it is a good plan to allow as much material as possible upon a garment for a growing girl, or one which is to be handed down to a smaller sister. This amount of extra turning will facilitate the letting down of the garment when necessary

PRESENTATION

The following procedure could be adopted by the teacher who, on obtaining correct answers to her questions, should draw upon the blackboard the diagrams illustrated. The questions given and answers received would probably be along these lines.—

Question · Can anyone tell the class how to turn up a hem 1 in wide?

Answer: The turning—a narrow one ¼ in. wide at the raw edge, was first turned on to the inside of the garment and tacked down. Then the width of the hem was measured 1 in. up from the first turning, and the hem was folded over at this width. The hem was then tacked in place all along, and hemmed down

Question Why was the ¼ in first turning tacked?

Answer: Because the stuff was springy and creasing alone would not make it stay in place

Question. Is there any other reason for tacking?

Answer: Yes, it is very much easier to turn the second fold of a hem when the first turning has been tacked down.

Question. When a hem such as has just been described has been turned up, how much material is used?

Answer 1¼ in

Question. How much material has been allowed for a hem on the garment now being made?

Answer · 3 in

Question: Yes, 3 in. has been allowed, in order that there shall be sufficient material to make the petticoat longer when it has to be let down A hem of 2¾ in. would be very wide and clumsy on this garment. Then what must be done in order to obtain a hem of 2 in only?

Answer: The first turning must be wider, viz, 1 in.

Question: Yes. This turning must be tacked down just as a narrower turning is tacked.

What is the next thing to do?

Answer. Measure 2 in from the edge and make the hem that width.

Question: Yes, but it will be difficult to turn up a hem of 2 in. unless the line of turning up is marked,—how can this be done?

Answer: By putting a tacking thread 2 in from the edge, all round the garment.

The teacher must here explain that the 2 in turning must be tacked down to the garment ¼ in. below the first line of tacking. This will hold the edge in place, while the rest of the hem will fall automatically into place, care being taken to see that seams

meet seams, and centre backs and fronts lie together

Where the hem is circular, tiny pleats must be made in order to dispose of the surplus fullness produced by the longer measurement of the outer edge when placed to lie on the garment, which measures less as it radiates towards the waist.

Pins should be sufficient for fixing, if the hem is to be held down by hemming, but if it is to be machined, a row of ½ in. tacking stitches must be worked just inside the fold, and machining should then be worked from the right side, exactly over the tacking stitches

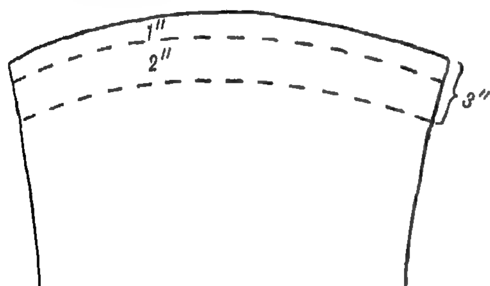
SUGGESTED COURSE OF LESSONS FOR THE SECOND TERM

It is proposed that the garment to be made shall be a dress in printed material, either for the maker's own wear or for a smaller girl. For this dress a bought pattern is used, suggested patterns being "Children's Dress" No 48,806, "Children's Dress" No. 48,808, or "Best Way" No 45,805.

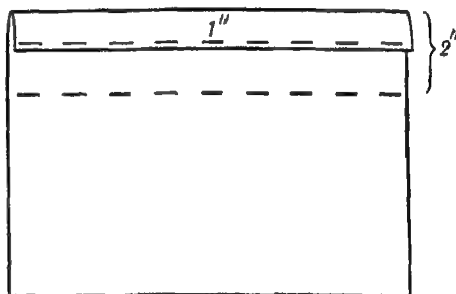
LESSONS 1 and 2

Laying a pattern on to material.—Show, on one of the girls, or upon a dress stand, a dress made from one of the patterns in similar material to that which the girls are to use. Explain the interesting characteristics of the dress. Inform the girls of the approximate cost of (*a*) a dress to fit one of themselves, with the cost of the pattern; (*b*) a dress for a smaller child

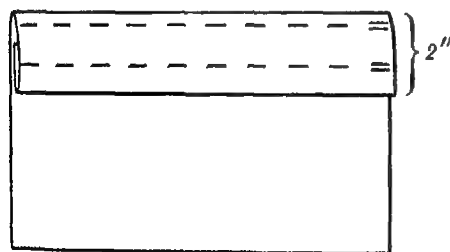
Show as varied an assortment of suitable materials as is practicable, inviting the girls to purchase and bring to school their own materials when they can be purchased



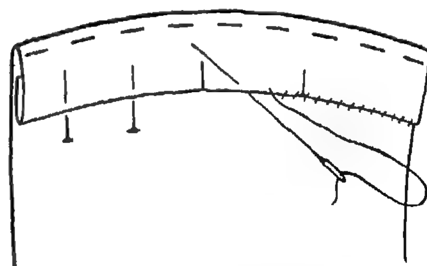
Marking the hem edge line and the turning line with tacking



Section showing first turning tacked



Second turning tacked


Management of curve- Hem pinned and small pleats arranged

Turning Up a Wide Hem

locally. Explain the desirability of buying well-advertised materials of British manufacture.

Note.—Every girl should be provided with knitting, as the preliminary stages of this term's work consist of much that is individual, such as the choice of materials, and colours, the amount of material required, the sizes of patterns, etc. These points must be dealt with by the teacher interviewing each girl in turn, and will undoubtedly take two lessons. The paper patterns must be ordered at the conclusion of Lesson 1, in order that every girl shall have her pattern in readiness for the third lesson.

LESSON 3

Adapting a bought pattern.—Adapting the paper pattern to individual measurements, either to the girl's own size or to the size of a smaller child Details of the arrangement of this lesson are given on page 324.

LESSONS 4 and 5

Cutting out.—Adapting the patterns and the beginning of cutting out. Illustrations showing how the pattern is placed on the material are to be found on page 324

LESSONS 6, 7, 8 and 9

French seams.—Joining up the garment by means of French seams, either by hand or by machine

LESSONS 10 and 11

Revision.—Revision of making a continuous strip opening and its application to the short front opening at the neck of the dress.

Length of opening = 3 in. to 4 in Width of strip (finished) = $\frac{1}{2}$ in., therefore the cut strip = 6 in to 8 in. by 1 in. Proceed as in making a back opening on a petticoat.

LESSON 12

Joining the bodice and skirt of a child's dress.—The details and arrangement of this lesson are given on page 326, where the joining of a bodice and skirt for a small child has been described The same procedure is recommended for the making up of a dress for a girl of 10 years.

If, instead of gathers, pleats are required, these must first be tacked in place along the whole length of the skirt The joining to the bodice is then done in exactly the same way as when gathers are used

LESSONS 13, 14 and 15

Continuation of practical work.—As the girls complete the joining of the bodice and skirt, they can begin to turn up a bottom hem of 3 in. with an inner turning of 1 in., to facilitate letting down the hem when it becomes necessary.

There now remains the neatening of the neck and armholes The dresses may be finished off with collars and sleeves, or with binding, as may be desired by the girls themselves The capability and keenness of each girl will usually prove to be the deciding factors.

LESSON 16

Making up sleeves.—Group demonstration on making up sleeves with French seams Care must be taken to ensure.—

1. That a *pair* of sleeves is made.
2. That the size of the head, on top of the sleeve, is larger than the armhole into which it is to fit.

LESSON 17

The use of bias binding.—Group demonstration on "The use of bought bias binding," for neatening by binding the neck and armholes of a dress. The outside edges of the collar and cuffs may be included. The details and arrangement of this lesson are given on page 328.

LESSONS 18, 19 and 20

Setting in sleeves.—Continuation of practical work, and group demonstration on "Setting in sleeves." The details of this lesson are given on page 330.

LESSON 21

Setting on cuffs and collars.—Group demonstration on "Setting on cuffs and collars," by means of a run and fell seam

LESSONS 22, 23 and 24

Continuation of practical work.—Continuation of practical work, finishing off and pressing the dresses Fastening at the neck by means of two blanket-stitched loops, and two ½ in pearl buttons Pockets may be sewn on if desired. The shape of these may be either according to the shape of the pattern pockets or as desired by the girls

FIVE LESSONS IN DETAIL FOR THE SECOND TERM

LAYING A PATTERN ON TO MATERIAL

(Details and Demonstration of Lessons 1 and 2)

THIS lesson may be given in an informal manner, by the teacher arranging the pattern upon the length of material laid out on a table This is less artificial than the method whereby "lays" of patterns are shown pasted upon brown paper cut to represent material of various widths

In order to economise in material, a length of the actual stuff to be cut by one of the girls may be utilised. This need not be cut by the teacher, beyond that part which must accommodate the various pieces of pattern. Some of these pieces have to be placed upon refolded material, i e, the centre front and back lines of the bodice must be placed to a selvedge fold of material, folded to a perfectly straight thread. The weft threads must lie at right angles to this—i.e., across the chest and back of the wearer. This is important, in order that the garment may hang straight on the figure

Plenty of pins should be placed through both the pattern and material at right angles to the edge of the pattern, at intervals of 2 in all round

The pattern should be placed economically —i e, in such a way that a few pieces of large dimensions, rather than many pieces of small size, are left over. These larger pieces may be made use of in many ways.

On a bought pattern, the turnings are usually allowed, and the material may therefore be cut close to the pattern.

ADAPTING A BOUGHT PATTERN TO INDIVIDUAL MEASUREMENTS

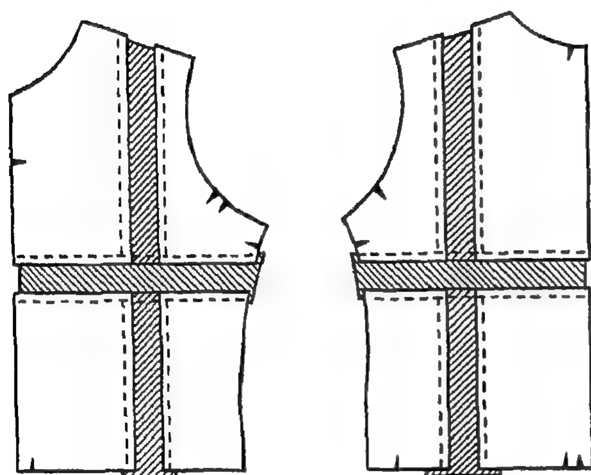
(Details and Demonstration of Lesson 5)

PREPARATION

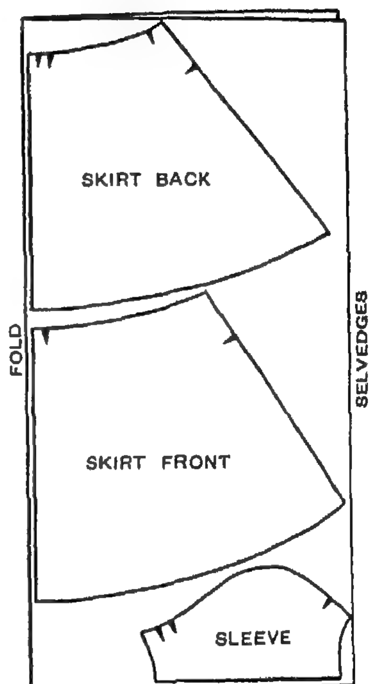
Previous knowledge—Making the pattern of a petticoat. Altering the pattern of a doll's clothes.

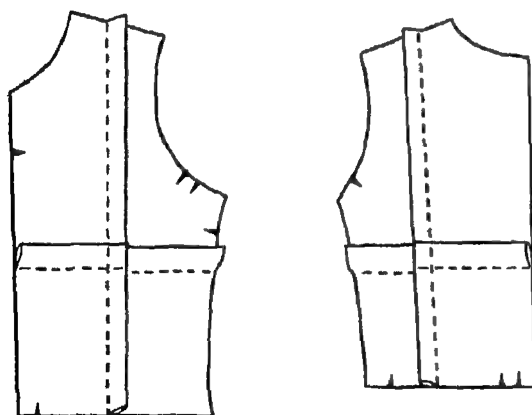
Aims.—The aims of this lesson are to teach a practical method of altering a stock-size pattern of a dress to individual measurement, either to enlarge or to reduce the size of the pattern; to train the pupils in resourcefulness and ingenuity, to teach girls to make good use of facilities offered by pattern makers

Teacher's requirements—The teacher will require a copy of the fashion book called *Children's Dress* which contains a pattern of a simple yoked frock, for a girl of 10 years. Strips of coloured paper, bright green or orange, 3 in in width Pins; tape measure; scissors and paste A pattern, similar in shape, which has already been lengthened

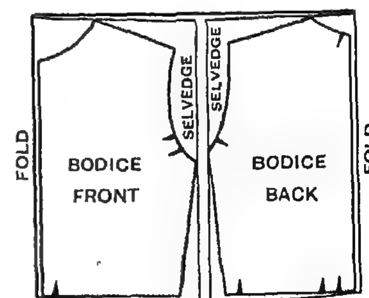


Bodice pattern widened and lengthened





Bodice made shorter and narrower



Placing pattern on to material showing refolding for bodice

ADAPTING A BOUGHT PATTERN

and widened, to which reference must be made as the lesson proceeds. Two blackboards; chalk and drawing pins A finished dress cut to the pattern to be used for demonstration purposes

INTRODUCTION

The finished dress should be displayed, either on a stand or on a coat hanger, and, as the girls will have already seen and discussed it, they will need only to be reminded that the demonstration pattern was previously used for the purpose of cutting out the dress shown.

PRESENTATION

The teacher should demonstrate the enlarging of a pattern by cutting it where necessary, in order to lengthen or widen it. She should there insert strips of coloured poster paper of bright hue, and of the required width to enlarge the pattern.

The width could be ascertained by measuring a girl in the following manner:—

1. From the shoulder to the waist, or to the position on the body where the joining line of bodice and skirt is required.
2. Across the chest
3. Across the back, between the armholes.
4. Round the bust, under the armpits.
5. Total length of the dress, i e., from the shoulder to the knee
6. Length of bodice required down the centre back.
7. Length of sleeve required, from the shoulder down the back of the arm

Note—These measurements must be taken carefully and exactly, and the teacher should supervise and check the measurements of every girl, before the patterns to be used are altered Where dresses are to be made for small children, this cannot be done, but the teacher should know the approximate measurements of children of various ages in order to be able to check lengths and widths

The strips should be cut approximately 3 in in width, which will allow an ample margin to which the pattern may be pasted.

The following are the rules to be observed when adapting bought patterns to individual measurements:—

1. All alterations must be proportionate, i e, where the bodice needs lengthening by more than 1 in this must be done twice, first between shoulder and armhole, and again between armhole and waist, otherwise the pattern would be too long in one place or the other. The same rule applies to shortening, which is achieved by pleating
2. To widen a pattern, or to make it narrower, the centre back and centre front lines or folds must never be used, all such alterations must be made between the neck and the armhole, i e, cut or pleat halfway along the shoulder line.
3. The armhole having been widened, or narrowed, care should be taken to alter the width of the sleeve proportionately.
4. As a general rule all skirts can be lengthened by allowing extra length at the foot. Skirts may be widened by cutting and inserting strips of paper, or narrowed by pleating.
5. All insertions of strips of paper, or any pleats made, must be securely pasted or tacked before the pattern is placed on the material

When the pattern has been altered to the desired measurements, it should be explained to the girls that the alterations are made in the middle part of the pattern in order to retain the shapes and lines of the outer edges.

APPLICATION

The girls may now adapt their patterns to the desired measurements, and afterwards pin them together and try them on

The dress described as being made by the girls is a sleeveless dress for a child of four to six years of age, made from "Best Way" pattern, number 45,805, either with or without pockets or collar, according to the capabilities and wishes of the girls, who will probably buy the dresses for small sisters or other little relations or friends

The girls are given the choice of three materials, namely:—

1. Zephyr, 38 in. wide, price 1s. 2d. per yd., in three or four good colours, such as Nos 7,511 yellow, 7,514 pink, 7,112 blue and 7,504 green

2. Zephyr, price 1s. 2d. per yd., in a check of not too aggressive a pattern, such as Nos. 7,627 blue, 7,630 red and 7,631 brown.

When using materials of check pattern avoid either too strong a colour, or too marked and too large a check. While these characteristics are liable to induce eye strain, the large check design will be found uneconomical in use owing to the difficulty of placing parts of the garment to match the design of the material

3 Flowered or printed material of small design, and of not too fine a texture, such as "Hoyparelle" or "Tobralco," price 1s. 6d. per yd., 36 in. wide, Nos. 2,704 or 2,709.

All these materials are obtainable from Messrs. Leighton and Baldwin, Ltd, 71 Wood Street, London, E C 2

JOINING THE BODICE AND SKIRT OF A CHILD'S DRESS

(Details and Demonstration of Lesson 12)

PREPARATION

Previous knowledge.—Making French seams on the dress.





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TOBRALCO

Aims.—To teach a practical method of joining a bodice or yoke of single material on to a full skirt, and to encourage dexterity in manipulating fullness.

Teacher's requirements.—A finished dress, as illustrated. A large working specimen, 20 in. by 30 in., to represent the skirt, and a piece 20 in. by 15 in. to represent the bodice. Both pieces should be of cream Alpha cloth faced with brightly coloured muslin, in order to define clearly the right and wrong sides. Four-ply red and black wool, demonstration needle, large pins. Marker, or demonstration tape measure, blackboard and chalk

Children's requirements.—The work in hand, the majority of the girls being ready for learning this new process Part of the process may be demonstrated during the lessons.

INTRODUCTION

State that as nearly everyone has joined the seams of the dress, and has made the hems on the back, the bodice and skirt are now ready to be put together Question the class in order to revise the method of joining two flat pieces of material, i.e., a French seam Show the girls that this method is not particularly suitable for any part of a garment which has to be gathered or pleated, as the effect is bulky A flatter method is preferable. Display the inside of the dress, by passing it round, and ask the girls to look at it. The centres of the front and back edges of the bodice and skirt should have been marked by a small tacking thread, immediately after cutting out.

DEMONSTRATION

Mark the centres of both demonstration pieces Upon the right, or unfaced side of the larger demonstration piece, work in red wool a row of running stitches 1 in below the raw edge This will represent gathering a ¼ in below the top edge of the skirt. Then, in order to make the skirt easy to



[Reproduced by courtesy of The Amalgamated Press, Ltd

TYPE OF DRESS SUITABLE TO BE MADE DURING THE THIRD YEAR

fix on to the bodice in as flat a manner as possible, work a second row of running a ¼ in. below the first row (The second row will be worked 1 in below the first, on the demonstration specimen.) To fix the bodice and skirt together, place the centre of the front edge of the skirt to the centre of the front edge of the bodice, so that the right sides are facing, and the raw edges are level. Pin the centre fronts of both pieces together, putting the pins in an upright direction; then pin the centre back of the skirt to the middle of the overlapped hems on the bodice, and lastly pin the seams of the skirt to the seams of the bodice. Draw up both gathering threads together to fit easily on to the bodice, keeping the skirt next to the worker, so that the manipulation of the gathering is easy This process may be demonstrated on a flat piece, the girls having sufficient intelligence to realise the reason for so doing. The method of demonstrating this is to pin upon the board the piece to represent the bodice, with the right (unfaced) surface showing, and with the gathered piece placed upon it.

CONTINUATION

Pin the bodice and skirt together at intervals of 2 in all round Run the bodice and skirt together over the second line of gathering, making a back stitch at intervals, ascertain that the seams are turned towards the back of the garment Back-stitch over the seams, in order to ensure firmness at this point. Demonstrate the joining, using black wool. The class should now be allowed to join bodices and skirts, after which the teacher will demonstrate the neatening of the raw edges. Details of this demonstration are given below

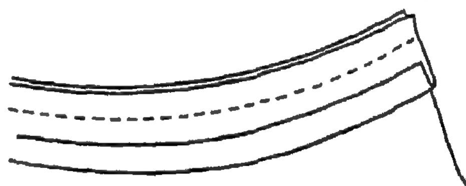
THE USE OF BIAS BINDING

(Details of a Group Demonstration of Lesson 17)

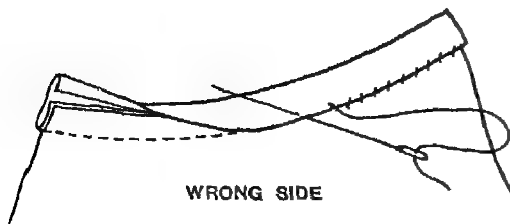
The girls, in small groups, may be shown the manner of neatening and decorating necks, etc , with bias binding when they are ready to use it. The teacher should



Section showing appearance of bought binding



Running on first crease



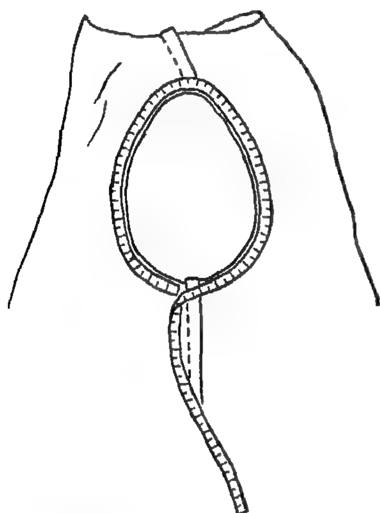
Section showing hemming



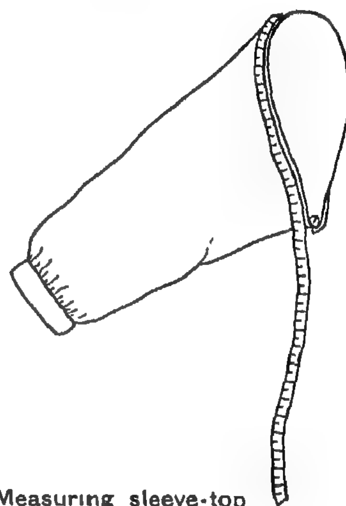
Appearance on right side when finished

THE USE OF BIAS BINDING

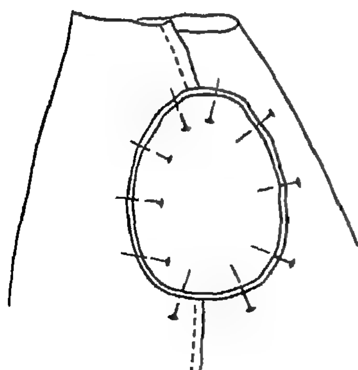
explain to the class what is meant by "bias" binding, after which the girls should be encouraged to match their own material, and to purchase their own bindings Bias binding is to be bought at every shop stocking haberdashery, and is extremely useful in many ways It is sold either by the yard, or in neat packets of convenient lengths, and in very many kinds of materials, e g, batiste (a stiff cotton material), lawn, cambric, figured cotton, and in various kinds of silk, and in every possible colour. When only a short length is required and it is not possible to find in the piece bag a suitable piece of material from which crossway strips could be cut, the required length could be purchased of the kind called "Fill-a-Want" When longer lengths are necessary, a 3 yd length upon a card may be obtained Cotton binding, in



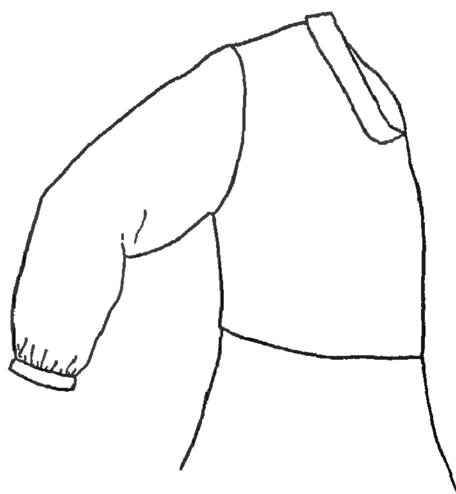
Measuring the armhole with tape measure



Measuring sleeve-top



Sleeve pinned into armhole



Finished appearance of sleeve

SETTING IN SLEEVES

white or orange, is used for the dress illustrated

The method of attaching to the neck is clearly shown in the illustrations; therefore no further directions are here given.

SETTING IN SLEEVES

(Details of a Group Demonstration of Lesson 18)

Setting in sleeves is also shown by illustrations. The important point to be noted is that the armhole and the sleeve must be in relation to each other as regards the measurement round each

The sleeve should measure 1 in. more than the armhole (unless puff sleeves are required); if the armhole is too small it should be made larger under the arm, but not at the chest The widths of back and chest, and the length of shoulder, should remain unaltered if the pattern has been correctly adapted.

SUGGESTED COURSE OF LESSONS FOR THE THIRD TERM

THE garment to be made during this term might consist of knickers, of material like that used for the dresses of the previous term Odd pieces of the material may be joined when necessary, thus inculcating ideas of economy

Independent work might be tried. The girls should now be familiar with simple pattern making, and may be trained to follow written instructions. Directions for making and cutting the pattern could be hectographed, and a copy of the directions could be given to each girl.

The use of written instructions must not be allowed to supersede the giving of a particularly clear explanation of the pattern by the teacher, before the girls try it by themselves. The making of knickers is simple, and the work of this term may again be of an informal type.

It will be seen that decoration plays little part in the work of this year. This is almost entirely due to the dictates of modern fashion, figured material is unsuitable for decorating with any sort of embroidery. Where girls are trained to follow written instructions, they should have no difficulty in discovering by their own efforts methods of decorating garments by various stitches.

LESSON 1

Drafting the pattern of a pair of knickers.—Give out hectographed copies of a pattern of knickers Explain to the girls, firstly the pattern itself, and secondly the way in which the copies are to be used. Details of this lesson will be found on page 331.

LESSONS 2, 3 and 4

Practical work.—Joining up pieces of material and cutting out knickers.

Note.—Where two selvedges have to be joined they may be either oversewn together on the edges, when the pattern is printed right up to the selvedge, or they may be run or machined together $\frac{1}{4}$ in. below the edges on the wrong side and flattened out by pressing All such joins must be made before the garment is cut out.

LESSONS 5 and 6

French seams.—Joining up the short leg seams by French seams, either machined or run by hand

LESSONS 7 and 8

Making up knickers.—Arranging the fork of the knickers Illustrations and directions to be given at a group demonstration are given on page 333.

LESSONS 9, 10 and 11

Joining.—Joining the front to the back seams by means of a French seam.

LESSON 12

Neatening.—Neatening the legs by means of a garter finish Illustrations will be found on page 333

LESSONS 13, 14 and 15

Finishing the legs.—Finishing off the legs as already described, and pressing the work.

LESSONS 16, 17 and 18

Neatening the waist.—Neatening the waist by means of a hem to fit the elastic used. The hem is to be held down by running, or by machining on the edge of the hem. Hemming is not sufficiently flat for the purpose of forming a slot.

LESSONS 19 to 24

Completion of the work.—The remainder of the lessons this term might be devoted to finishing the knickers, pressing and showing the work.

When any girls have one or two lessons entirely free they could be allowed to look through needlework and fashion books, in order to find out any stitches or processes they would like to learn. They might be given the opportunity of trying some of this work entirely by their own efforts Very often the results of the whole of the four years' work can be partly, though not entirely, judged in this manner The capability and keenness of the girls are directly evident to the wise teacher of needlework.

TWO LESSONS IN DETAIL FOR THE THIRD TERM

DRAFTING THE PATTERN OF A PAIR OF KNICKERS

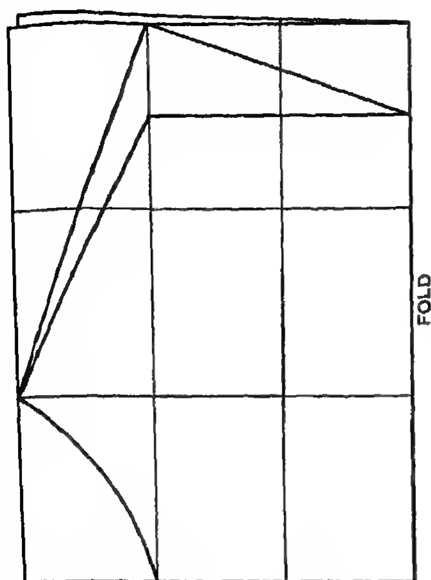
(Details and Demonstration of Lesson 1)

BY the aid of a duplicated copy of the pattern with the necessary notes as given here, the girls should be able to draft this simple pattern almost entirely by themselves

A short explanation should first be given to the whole class by the teacher, who will demonstrate the following details —

1. Taking the necessary measurements·
   (*a*) Length of leg, from waist to knee, *or* calculating $\frac{3}{8}$ height
   (*b*) Hip measurement, *or* calculating $1\frac{1}{4}$ times the length to obtain the width.
2. Cutting a piece of paper, the area of which = length × width.
3. Folding into divisions.
4. Marking the shaping lines
5. Cutting the pattern

The girls may make a pattern, the te correcting it before any cutting is do



PATTERN OF A PAIR OF KNICKERS

Similarly, the cutting out should be done by the girls, demonstration is unnecessary, before scissors are used supervision should be given by the teacher as each girl is ready for it.

The measurements for a pair of knickers for a child of ten years are as follows:

Height = 50 in.

Length = $\frac{3}{8}$ height

Width = $1\frac{1}{4}$ length + 2 in

Size of paper = 21 in × 27 in approximately.

Fold in half, then in three each way.

Waist back: 1 division in, $\frac{1}{2}$ division down on fold.

Waist front: 1 division in, $\frac{1}{2}$ division down; $\frac{1}{2}$ division down on fold.

Leg: 2 divisions down, 1 division in the curve, join waist lines to leg curve

Note on making up knickers with a front yoke.

Many garments of this type now have a yoke at the front, for this enables the outer garment to fit closely round the waist and eliminates any suggestion of bulkiness.

Cutting the yoke. This is cut in two pieces, the selvedge thread of the material running across the yoke.

The garment will be cut minus the yoke at front waist—the shapes of both yoke and garment will be seen on reference to any good paper pattern of the type already described, e.g., "Children's Dress" No. 46862. This pattern will be found particularly suitable for schoolgirls.

The garment is made in exactly the same manner as has already been suggested; it should be completed before the yoke is attached, even to the fixing of the elastic across the back waist.

Making the yoke. Tack together the two pieces which comprise the yoke, with the right sides of the material facing.

Run them together along the top of the waist edge, cut the turnings down to $\frac{1}{4}$ in and then snip these at intervals of $\frac{1}{2}$ in. in order to allow the turnings to lie flat Turn the yoke to the right side, thus enclosing the turnings, and tack close to the edge along the top. Press this before proceeding further.

The garment now has to be enclosed between the two pieces of the yoke, so that the edge of the yoke must now be turned in all round and tacked with fairly small stitches.

Fixing the yoke. The yoke has now to be fixed on to the garment. Pin the point to the front seam, on the right side of the garment, placing the pin in an upright position Next pin the yoke in position at the ends, taking care to see that the seam at the top of the yoke is quite level with the top of the hem at the back of the garment. Place pins right up to this. Fix the intervening part of the yoke, and then hem this all round. Fix the inside of the yoke in exactly the same way, and hem round, taking care not to take the stitches through to the right side. The corners will require great care both in fixing and in securing, as the whole set and fit of the garment depends entirely upon the flatness of the yoke

MAKING UP KNICKERS

(Details and Group Demonstration of Lessons 7 and 8)

One of the garments is used for this demonstration, no other equipment is needed.

The following order should be adopted in making up this garment:

1. Join short leg seams by French seams, or machine and fell seams

2. Join the front to the back seam.

In joining this seam, begin from the fork where all the four seams meet Arrange the two short leg seams so that the lines of seam and stitching lie together when seen on the right side of the garment

Back-stitch across the width of the seam, at the distance down of the first stitching, i.e., ¼ in. for a French seam and ½ in when a machine and fell seam is to be used.

Continue the line of stitching towards either back or front waist of garment

Turn the work, and stitch from the fork towards the waist, thus completing the first line of stitching Finish the seam.

3 Neaten the waist by a hem of ½ in. to contain elastic.

4. Neaten the legs by either—

(*a*) crossway facing,

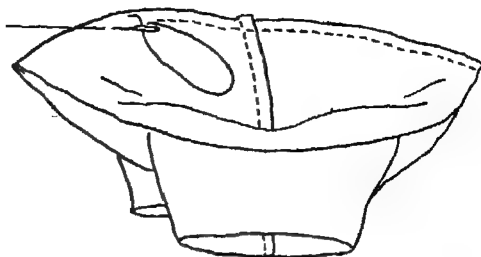
(*b*) a hem of ½ in,

(*c*) a garter finish, as illustrated

It must be observed that whenever elastic is used the hem must be just wide enough to accommodate the elastic, which should be at least ⅜ in. in width. A hem too wide causes the elastic to wear badly and to twist, while a hem too narrow wears badly at the folds.

An alternative method of neatening the legs is to bind and face together the edges, using contrasting coloured binding. Fold it over on to the wrong side, and run all the thicknesses which are at the edge together immediately below the line of running which secured the binding; ¼ in. of binding will show on the right side and will form a heading. The remaining part of the binding is hemm[illegible] down to the garment as though it wer[illegible]facing, and the elastic is placed thro[illegible]h th[illegible]asing as usual

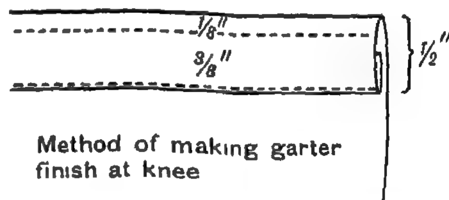
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Fork arrangement of seams



Finished appearance of knickers

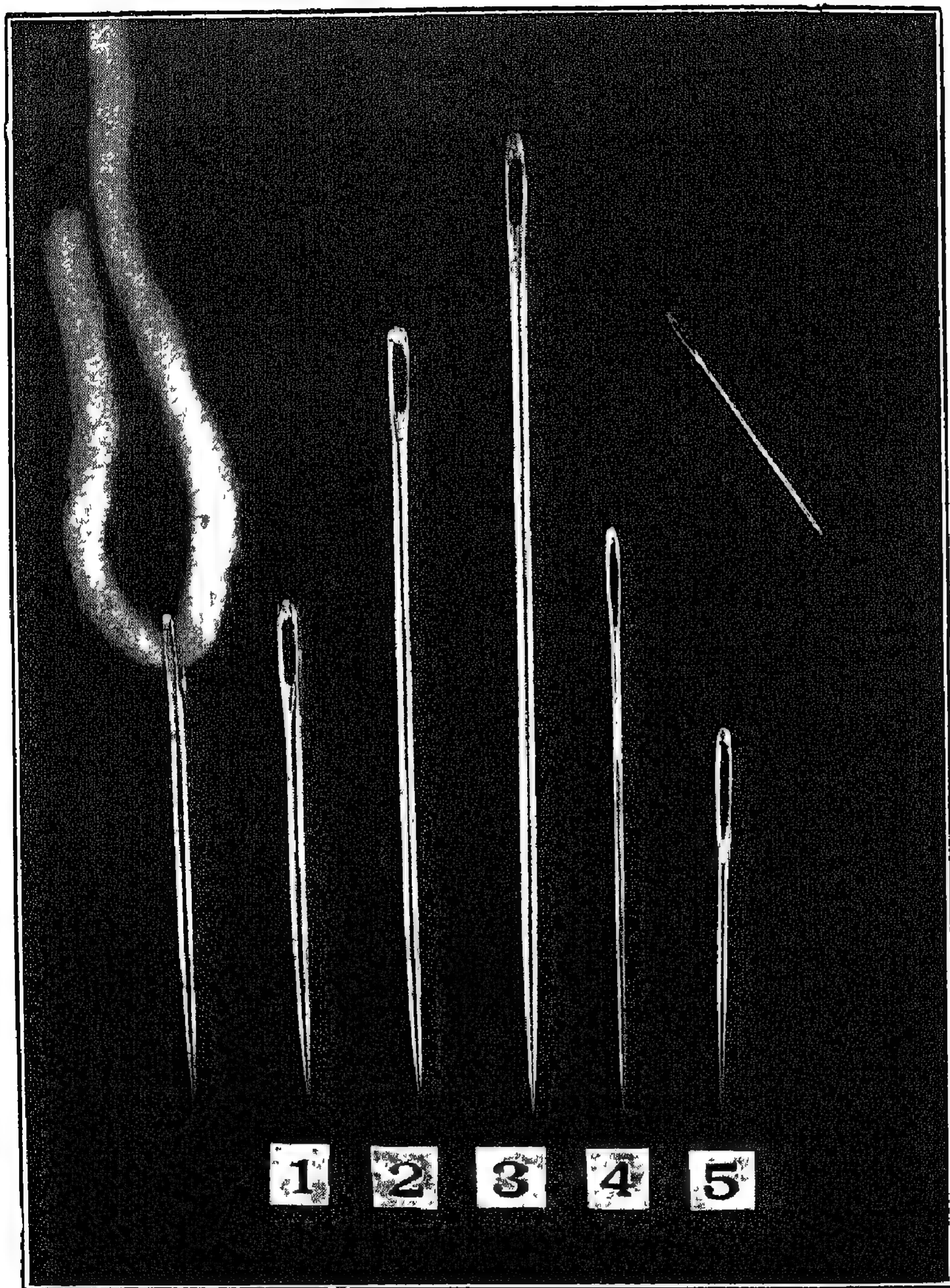


Method of making garter finish at knee



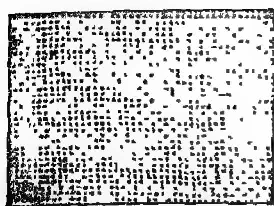
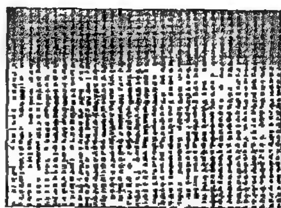
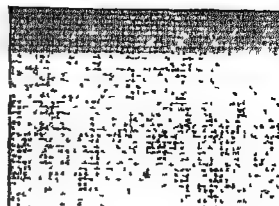
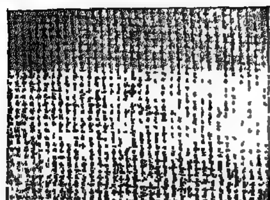
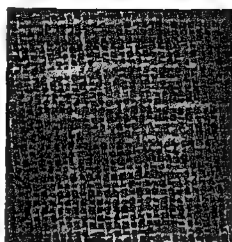
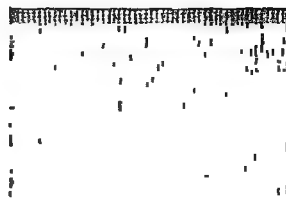
Ends of detachable elastic

MAKING UP KNICKERS



[Reproduced by courtesy of Messrs Cox & Co

AN ILLUSTRATION SHOWING THE SIZES OF VARIOUS NEEDLES FOR DEMONSTRATION PURPOSES.

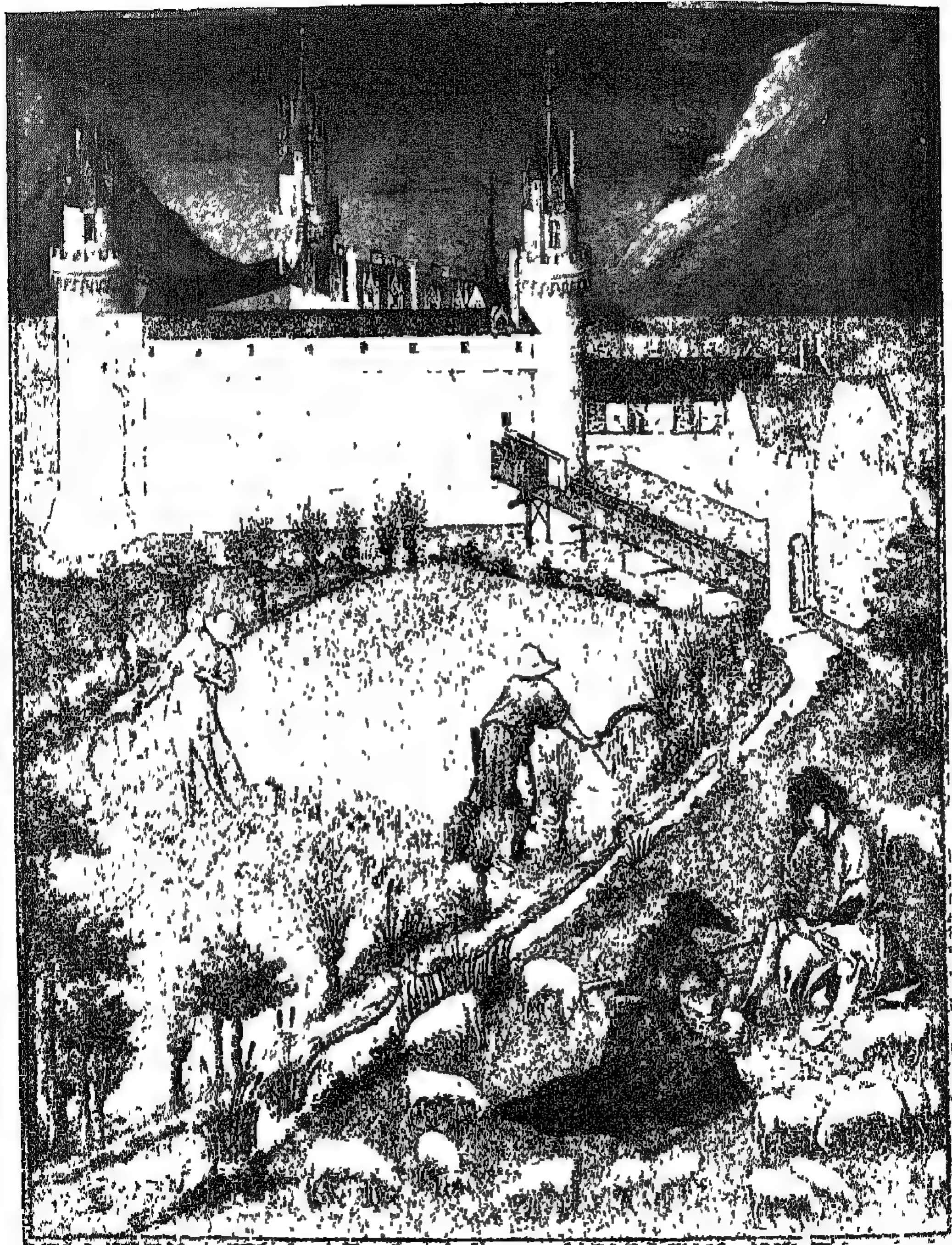








[*Reproduced by courtesy of Messrs Cox & Co*

THE ABOVE ILLUSTRATIONS SHOW THE TEXTURES OF VARIOUS MATERIALS SUITABLE FOR PREPARATORY NEEDLEWORK AND FOR DEMONSTRATION PURPOSES, ALSO A USEFUL CARDBOARD MARKER KNOWN AS THE "GUILD NEEDLEWORK INCH MEASURE"

FOURTH YEAR'S COURSE OF NATURE STUDY

(There is an alternative course for the Fourth Year in Vol VII —*Essentials to the Study of Nature* The Class Pictures associated with this Fourth Year's Course are Nos 135-140 in the portfolio. They are fully described in the Reference Book)



From the painting by Pol of Limburg, by permission of Le Musée Condé] [*Photo Rischgitz*

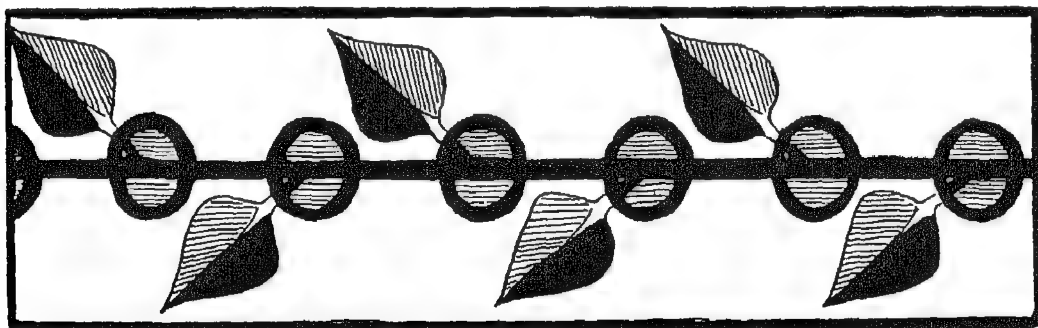
JULY

FOREWORD TO FOURTH YEAR'S COURSE

IT will be seen that a large part of this year's course has been devoted to describing the study of trees This does not, however, mean that a disproportionately large number of lessons should be spent on the subject, but as many of the other lessons, though dealing with new subject matter, follow the lines suggested for previous years, it was thought wise to deal with this new subject and its treatment in greater detail The lessons on weeds and the study of individual plants may be expanded to any extent, as there is no need to limit the number chosen At this stage, too, as the children's interest in living things has deepened, there will be many incidental subjects arising out of their interests, and it is possible that part of the time allotted to nature study will be spent in gardening, even if definite gardening periods are also allowed. Certainly much of the time should be spent *in the garden*, which should increasingly become the centre for both experiment and observation.

Children will more and more demand reference books for their own use, and they should depend less on the teacher for identifying the birds, butterflies and other insects found in garden, field and woods Very useful books to add to the reference shelf are the *Adventure Series of Nature Books*, published by Messrs Macmillan & Co Ltd (See advertisement at the end of Vol I)

I. TREE FORM IN SUMMER



POINTS FOR THE TEACHER'S CONSIDERATION

THE study of the form of trees would be carried on chiefly out of doors. It may be begun either in June or July, or early in the autumn term while the foliage is still full. in any case the seasonal phases of growth should be observed at both times It is necessary at the beginning to select trees with well-marked characteristics, so that these characteristics can be easily grasped and remembered for comparison with less distinctive forms It is important, however, that children shall

not gain the impression that all trees of one kind conform to a set pattern Their range of individual difference is wide, and may be due to innate variations, or to the influence of such factors as light and wind The nature of the soil and water supply may influence both size and form. Young trees do not show all the same characteristics as old trees, but being nearer to a common stock, they may resemble young trees of other kinds.

The Common Elm has been chosen to illustrate the method of study The Lombardy Poplar, Scotch Pine, Silver Birch, or a well-grown Beech standing alone where it can attain its full size and form would serve equally well

THE LESSON

Aim.—To recognise the Common Elm by its form, in summer.

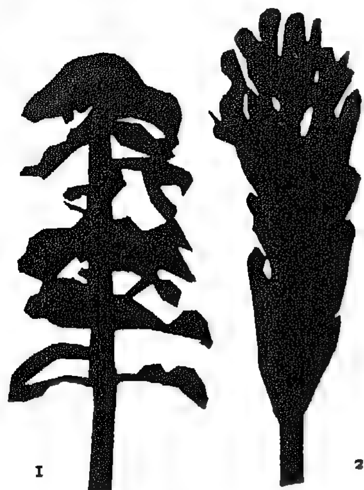
Material.—One, or several, mature Common Elm trees situated within easy reach of the school where a class may visit them If possible they should be seen isolated against the sky or some background which throws their form into relief.

Introduction.—Tell the children what is proposed Provide each child either with drawing materials or with two or three slips of black or dark paper and scissors. Take them to the chosen position and let them stand or sit in a-semi-circle at a sufficient distance from the tree or trees to be able to see the mass and general characteristics without their attention being focused on details It is a good plan for the teacher to stand behind the children in order to see that they all have good positions Direct their attention to a particular tree and ask them to consider how they would recognise the same tree again. What features characterise it?

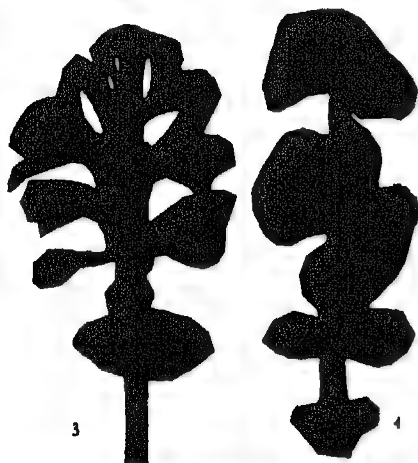
I. Let the children mention anything that strikes them. They will probably say that the tree is very tall This is vague. If there is anything near with which it can be compared—a house, a tower or a chimney —draw attention to it and give an estimate of the height. With intelligent children, if there is time, it is possible to measure the height of the tree For this purpose either a plane table is needed or a small stand with a flat top, a ruler and protractor An approximate idea of the height may be obtained as follows: Measure a base line from the tree to the point at which the table is fixed; place the table with one edge on the base, then by means of the ruler inclined upon the flat surface so that it points to the top of the tree, sight the top. Measure the internal angle made by the ruler with the base line Plot a triangle on a sheet of paper and draw the base to scale, to represent the measured base At the point representing where the tree stands draw a right angle. At the point where the plane table stands, draw an angle equal to the angle just measured Produce the sides subtending the two angles till they intersect Then the upright line subtending the right angle will give, by measurement, the height of the tree This method may be used for obtaining measurements of any trees subsequently observed

Now notice that the effect of height is largely due to the proportions of the tree. The trunk is mastlike, with comparatively short lateral branches It does not, as in many trees, send out long, thick branches from a low level, or divide into several main branches, but continues right to the top as a distinct main axis Estimate the width of the *crown*, or mass of foliage, in proportion to the total height. Notice at what height (about one-eighth to one-sixth of the total) the foliage begins

A distinctive peculiarity of the Common Elm will probably be picked out by the children. the foliage does not clothe the tree in regular contours, but presents at irregular intervals large gaps through which the sky can be seen. If the tree stands in a field where the ground is not periodically



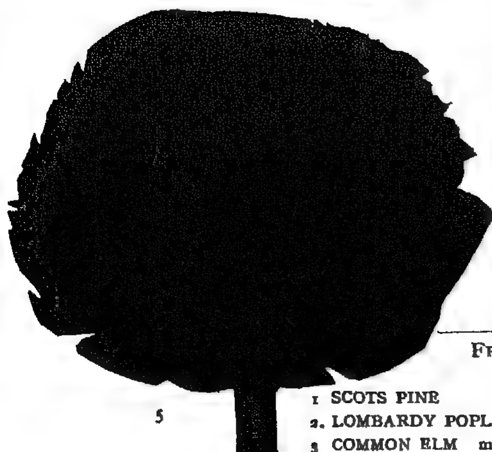
made tidy, the reason for this may be found. On going close up to the tree, possibly one or two fairly large branches and certainly many little twigs will be found lying about. These are shed by the tree throughout the year, and more especially in the autumn, just as it sheds its leaves. Many trees shed small twigs, it is a natural pruning, and helps to allow air to circulate amongst the remaining branches, but the Elm and the Scotch Fir or Pine shed branches as well, and this gives the ragged, irregular gaps. In the Pine trees there remain broken, jagged stumps; in the Elm there is usually a clean scar at the junction with the trunk, and in time this is overgrown with bark This peculiarity has given rise to the country people's belief that the Elm is a malicious tree, which throws down its branches to hurt the unwary



It will be noticed that the dropping of large branches usually takes place only in old trees, and therefore the younger mature trees have a much less broken outline, though the same towerlike, slender form.

The habit is facilitated by the absence of hard wood or heart wood, so that the innermost wood tends to rot easily For this reason, too, hollow elm stumps are common, for as the trees get old, they tend to be broken down by storms They are frequently blown over also, as the root system is both narrow and shallow. Broadly speaking, the root system of trees extends to the same width as the branches. These points may be told to the children either when discussing the form of the tree, or later in school

II. Let the children draw or cut out the shape of the tree. They might first draw a faint line to represent the space occupied by the crown, then draw the outline of the trunk, also faintly, and afterwards



FREE PAPER CUTTING—TREES WITH DENSE SUMMER FOLIAGE

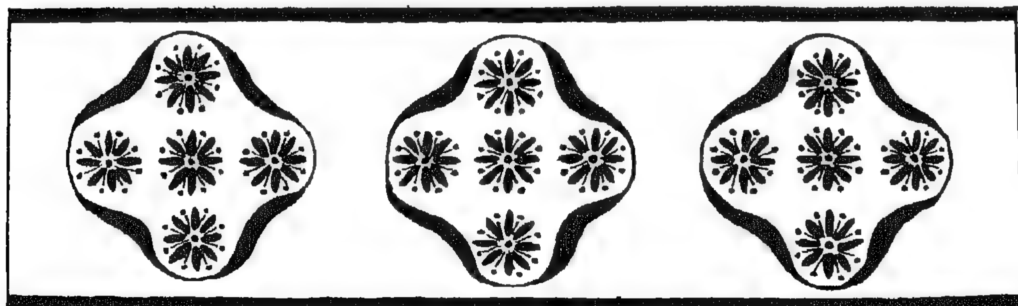
1 SCOTS PINE
2. LOMBARDY POPLAR.
3 COMMON ELM mature tree
4 COMMON ELM: much older tree showing gaps caused by fall of branches, and bushy outgrowth at base
5 HORSE CHESTNUT

attempt to show the main outlines of the masses of foliage and the branching as far as it can be seen, noting any gaps where light shows through. In the case of the Common Elm and a few other trees with a massive appearance and a clean-cut silhouette due to heavy foliage, it is worth while to let the children first of all attempt to cut out a representation of the tree in black paper. This should be done quite freely without drawing any outline. Such free cutting often results in much better proportions than if drawing is attempted at first, although drawings should be made subsequently If the study is made in the autumn the foliage is already getting thinner, and then this method of free cutting is not so good as drawing.

III. When an attempt has been made to represent the tree, look at several other Elm trees and find out to what extent the same characteristics are evident. Then let the children go close to the trees and look at the branches and leaves Structural features may be left until the leaves have fallen, but if possible some twigs and leaves should be taken back to school for study at a later period The size of the leaves, the shape (oval with a long pointed tip and an unequally lobed base) and the finely toothed edge, may be noticed on the spot as characteristics by which the leaves may be recognised afterwards.

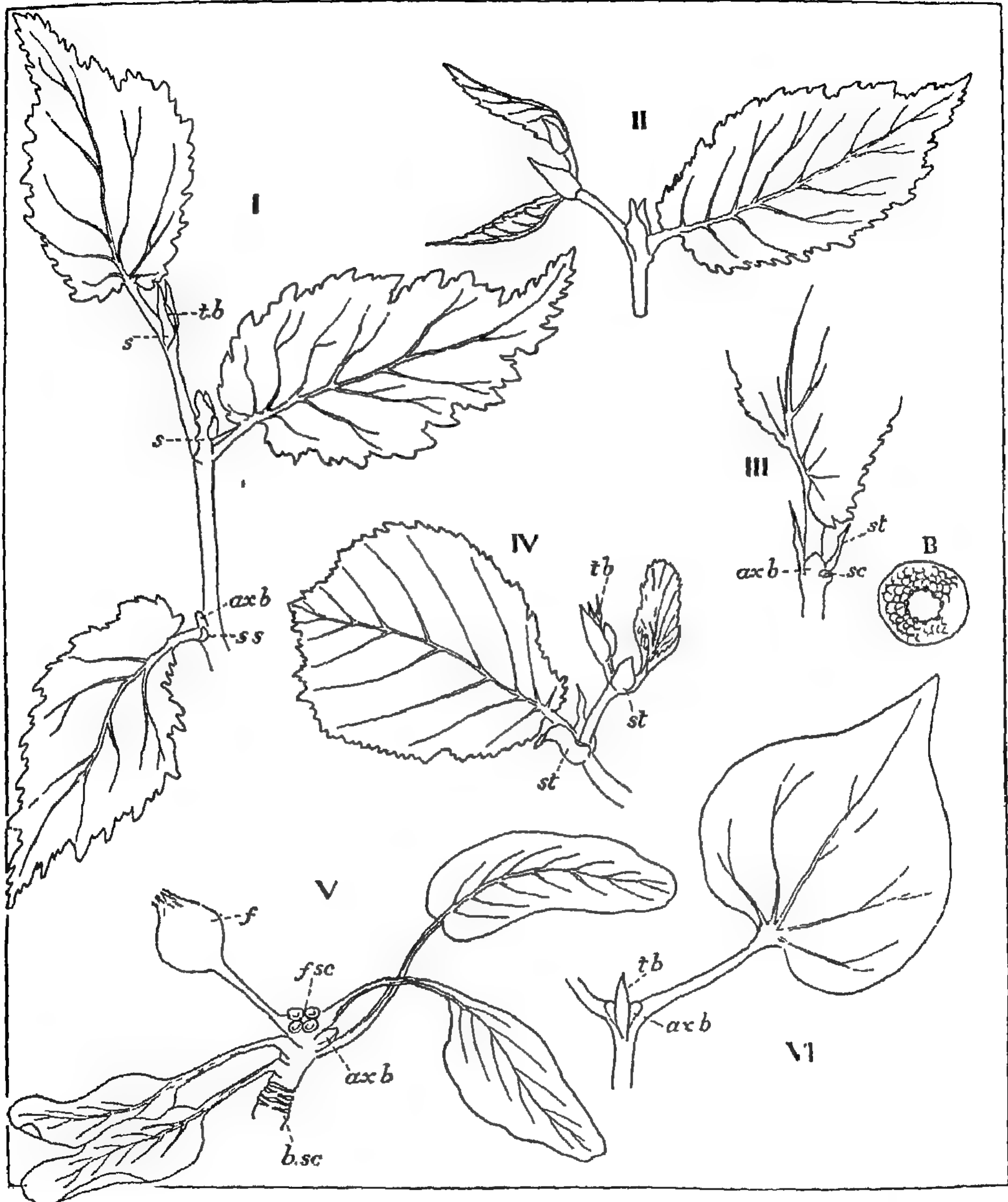
IV. On returning to school the black silhouettes may be mounted on white or light paper, or the drawings should be labelled. The main observations made should be recapitulated and arranged as notes. Leaves may be pressed or mounted, or leaf prints may be made The method for making leaf prints will be described later. (See page 351)

II. FURTHER WORK ON TREE FORMS



OTHER trees should be observed in the same way as that described in Lesson 1, but it may be possible to draw attention to several kinds in one expedition, and to compare their characteristics, leaving the children to make records independently If any of the children are the fortunate possessors of cameras, photographs make the best records. The photographs should be selected to illustrate definite points, for instance, the characteristics of different kinds of trees, the same kind of tree at different ages, or the variations in form, especially where this is due to

PLATE I.



TREES IN JUNE I

WYCH ELM I Growing twig *s s*, scar where the stipules (*s*) have fallen away, *t b*, terminal bud, *ax b*, axillary bud II Tip of twig broken away III Tip of remaining twig showing scar (*sc*) where break has been made, *ax b*, axillary bud III B Enlarged scar to show ring of closed vessels

HAZEL. IV Tip of twig *t b*, terminal bud, *st*, stipules

APPLE V Twig showing *f*, fruit forming, *f sc*, scars where flowers have fallen, *ax b*, axillary bud which will continue growth, *b sc*, last year's bud scars

LILAC VI Tip of summer twig, showing growth of axillary buds (*ax,b*), *t b*, terminal bud, which does not develop further

differences in the amount of space, shadowing by other trees, or the influence of prevalent winds. If the teacher can make or collect such a series of photographs, they may be used in the classroom *after* the open-air observations have been made to illustrate characteristics of form. Notes should be made on the height, width, proportion of trunk to crown, shape of crown and nature of branching.

The changes in the appearance of trees throughout the year should be looked for,—the gradual thinning of the foliage, the changes in colour which precede the main period of leaf-fall and the way in which the leaves fall (In the Horse Chestnut, for instance, many leaflets fall before their stalks, which remain stark on the tree for some time before they follow.) Winter buds form early in the summer, and these should be looked for In some trees, for instance, the Lime and to a less extent the Elm, small twigs are nipped off in June, carrying with them the apex of the stem and therefore the potential terminal buds. The axillary buds remaining behind take their place and continue the growth next year In other cases, as in the Beech, the minute terminal winter bud, formed at about the same time, shrivels and falls off, being pushed away by the axillary bud immediately behind it, which then takes its place. Many examples of both these conditions can readily be found in June This interference with the development of the main axis naturally affects the final form of the whole tree

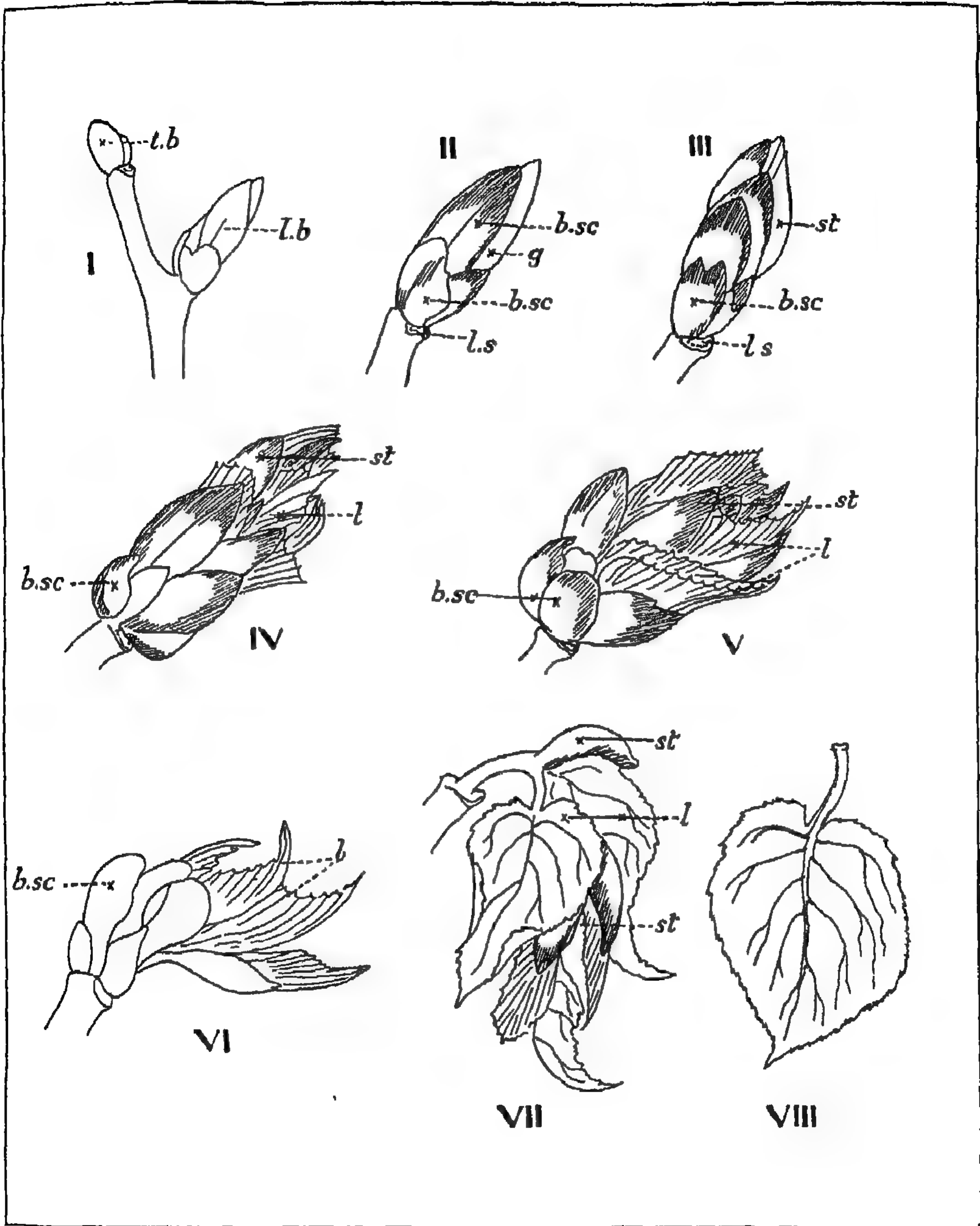
Class charts will make convenient records for continuous observations on trees throughout the year.

Notes on general form.—If the teacher is to guide the children's observations on form, it will be necessary to practise the recognition of trees from some distance, defining the distinctive characteristics by which each is recognised. Each attempt may be checked on a closer view, by examining the leaves, buds and bark. A few examples are given, as follow.

Scotch Fir or Scotch Pine.—At a distance this tree looks black or very dark blue-grey. It has a straight trunk, with a main axis to the top. Exact proportions cannot be given as they vary, but the width of the crown may be one-third the height of the trunk. Branching begins low down, at one-quarter of the height or less, but as the tree grows older most of the lower branches are shed, leaving a shaggy, compact top and a few ragged masses and broken projections lower down. On a nearer view the bark is seen to form large, irregular, square or rounded scales, of a beautiful red, golden and purplish colouring The tufts of leaves resemble bottle brushes, as they are arranged in close whorls, consisting actually of minute branches, each bearing two needle-like leaves This evergreen tree is not a fir

Horse Chestnut.—The silhouette of a well-grown specimen standing alone would fit into a circle, having a slightly flattened, nearly round crown, with branches extending rather more widely than its height. It begins to branch at about one-quarter of its height It is very solid looking; the large leaves give a slight dappling of light and shade even at a long distance, and the slight irregularities in the outline often show the tendency of the branches to turn upwards.

Oak and Beech.—Large solitary Oak and Beech trees may have similar proportions, but in both cases the lower edge of the crown is usually wider. In the Oak the foliage is less dense, in the Beech the canopy is arranged in flattened triangular shelf-like layers, sweeping widely out and catching the light on their upper surface. They may bend so low as to touch the ground; in any case they make a straight lower edge In the Oak the twisted nature of the branches causes the foliage to be disposed in irregular masses. In all these cases the main trunk gives off massive branches close together, so that it is sometimes difficult to distinguish the original main axis. The graceful, light sweep of the branches of the Beech is



TREES IN JUNE. II

LIME I—VII Opening buds; *l b*, lateral bud, *b sc*, brown scales, *g*, leaves enclosing growing point, *l s*, leaf scar, *st*, stipules, *l*, young leaf VIII Young leaf

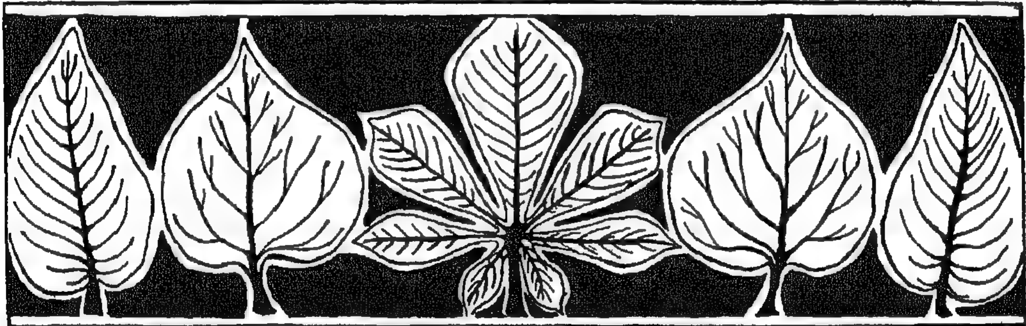
The growing point of the opening (lateral) bud shown forms a temporary or summer terminal bud The whole of the shoot shown breaks away in June, and winter buds form the lateral buds lower down

associated with the fact to which reference has been made, namely, that the branching is from axillary buds and not from terminal buds For structural details of this condition see Plates "Trees in June," I, II and III. Where growth is chiefly from terminal buds a stiffer, sturdier character is noticeable as in the Oak, Horse Chestnut, Sycamore and Ash

It will be noticed on comparing the summer and winter outlines of trees that the branches, bowed down by the weight of leaves, bend much lower in the summer The late Professor Miall made some careful measurements of this difference in height, which he found in some cases amounted to several feet.

For descriptions of the chief characteristics and for excellent photographs of trees, teachers are referred to Mr Edward Step's *Wayside and Woodland Trees* published by Messrs Warne & Co.

III. DIFFERENT SHAPES OF LEAVES



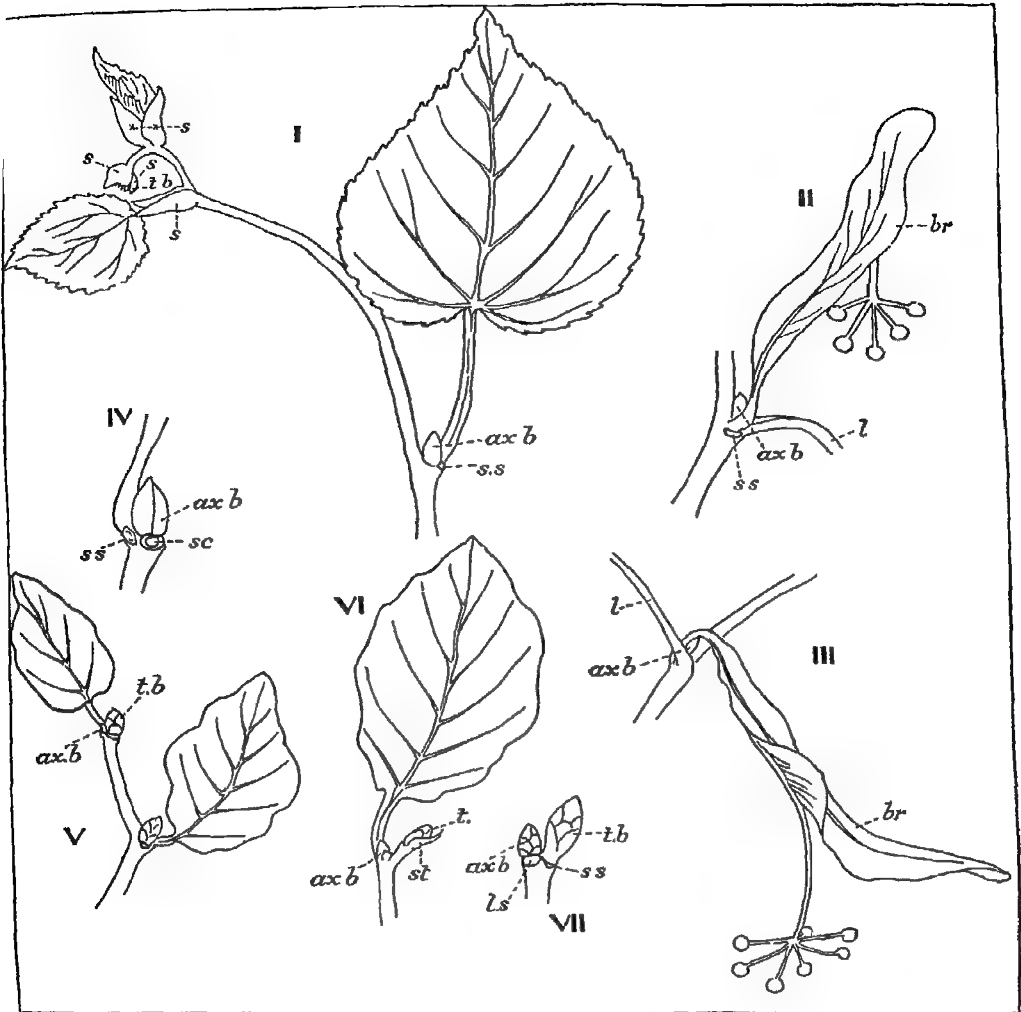
Aim.—To help children to recognise and remember the leaves of different trees by drawing attention to characteristics of shape, and grouping together similar shapes

Material.—Sprays of leaves and separate leaves of many different kinds It would be a good plan to let the children collect and press leaves beforehand, mounting them on separate sheets which could be put into a portfolio or made into a book. If obtainable, provide some photographic printing frames or some small plates of glass and wooden boards cut to the same size, which can be held together by strong elastic bands, self-toning paper and "hypo"

Introduction.—This lesson may take place either in summer or in early autumn; if preferred it may be combined with observations on the autumnal changes in the colour of leaves The children will be asked to pick out and name all the leaves they know. If a large sheet of dark paper is pinned upon the blackboard, the leaves may be lightly stuck on to it by means of any good vegetable paste, and the name printed in chalk underneath

I. The children may then be told the aim of the lesson, and asked to pick out the leaves which have similar shapes, and group them together in lists. These lists may then

PLATE III



TREES IN JUNE. III

LIME I Tip of twig during summer growth *t b*, terminal bud, *ax b*, axillary bud, *s s*, scar left by stipules, *s*, stipule II and III Flower in axil of leaf *ax b*, axillary bud, *s s*, stipule scar, *l*, leaf stalk, *br*, bract IV Side view of tip of twig to show scar (*sc*) where terminal part of twig has fallen away and axillary bud (*ax b*) which will take its place, *s s*, stipule scar

COPPER BEECH. V Twig, growth just ceased *t b*, terminal bud, *ax b*, axillary bud VI Tip of twig, showing axillary bud (*ax b*); *st*, stipule, *t b*, terminal bud VII Terminal and axillary buds *t b*, terminal bud, *ax b*, axillary bud, *l s*, leaf scar, *s s*, stipule scar.

be read aloud. Let us suppose they are somewhat as follows:—

I.	II	III.
Elm	Sycamore	Ash
Beech	Maple	Mountain Ash
Hornbeam	Plane	Walnut
Hazel	Wayfaring Tree	Elder
Birch	Hawthorn	
Alder		

IV.	V
Lime	Horse Chestnut
Black Poplar	Laburnum

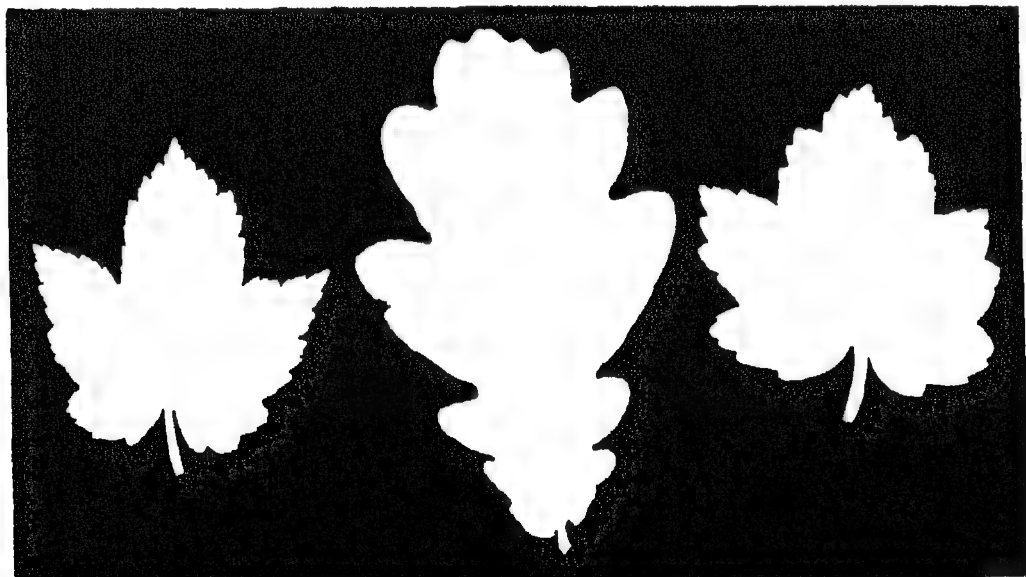
VI.	VII.
Willow	Oak

Discuss the characteristics which have led to this grouping The leaves of all the trees in Group I are more or less oval in shape, though they vary in size, in proportion of length to width, and in the shape of the tip or apex, and of the lower edge

The Elm has a narrow pointed apex, for instance, while the Hazel is broad, with a short point, and the Alder is slightly incurved In the Elm one side of the lower edge is usually attached to the stalk at a lower level than the other.

But if we are to compare shapes it is obvious that we need names for the different parts of the leaves. The part by which the leaf is attached to the branch is called its *base*. In the bud of a young leaf this is the first part to develop. The expanded green part is called the *blade*; its tip is the *apex*, and its edge is called the *margin* The *leaf stalk* separates the blade from the base, and is important in placing the blade in such a position that it can catch the light.

Hold up in turn several sprays of leaves and let the children see that, though the leaf bases are attached spirally round the stem, the stalks twist until the leaves, in most cases, are held in one direction If they are looked at on the tree, it will be



1 2 3

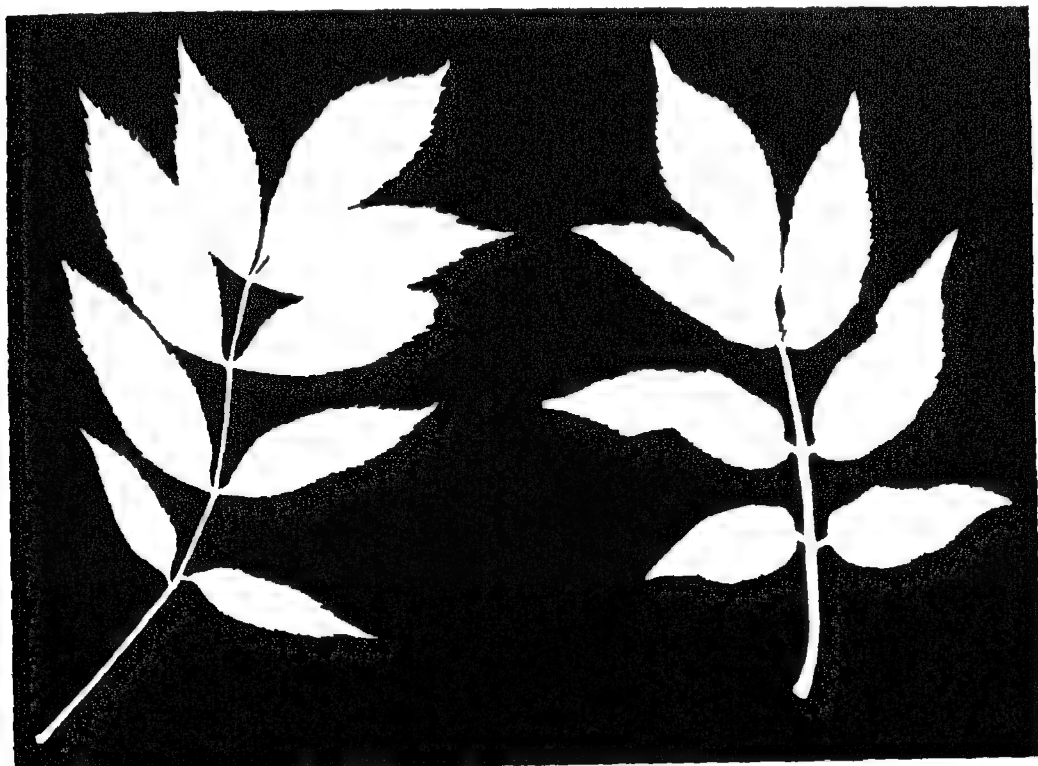
LEAF PRINTS

1 and 3 SYCAMORE: palmate leaves formed late in the year
2 OAK deeply lobed leaf.

seen that as far as possible they all face the light.

Tell the children that though it is impossible to explain the reason to them at present, it is exceedingly important to trees, and indeed to all green plants, that they shall receive plenty of light Trees have thousands of leaves, all thin structures with a large surface exposed for this purpose. Turn to Group IV. and notice the broad shape of the Lime and Poplar leaves, drawn out into fine points These leaves expose a large surface to the light They are heart-shaped Leaves which are nearly oval but pointed at the ends are called *ovate*, and the heart-shaped ones *cordate* from the Latin word *corda*, a heart. These terms may be given if the teacher thinks the children will be interested Children who are enthusiastic collectors often delight in technical names, and so long as these are not over-emphasised and have their proper place in the development of the subject, it is all to the good.

Now turn to Groups II and VII. The Oak and Sycamore leaves differ from those previously considered, in having their margins deeply indented or cut into lobes Probably this helps the leaves as a whole to gain more light than if they were like those already considered, since the light can filter through the gaps to those below In the summer-time it is possible to test the difference in light under different trees (1) by



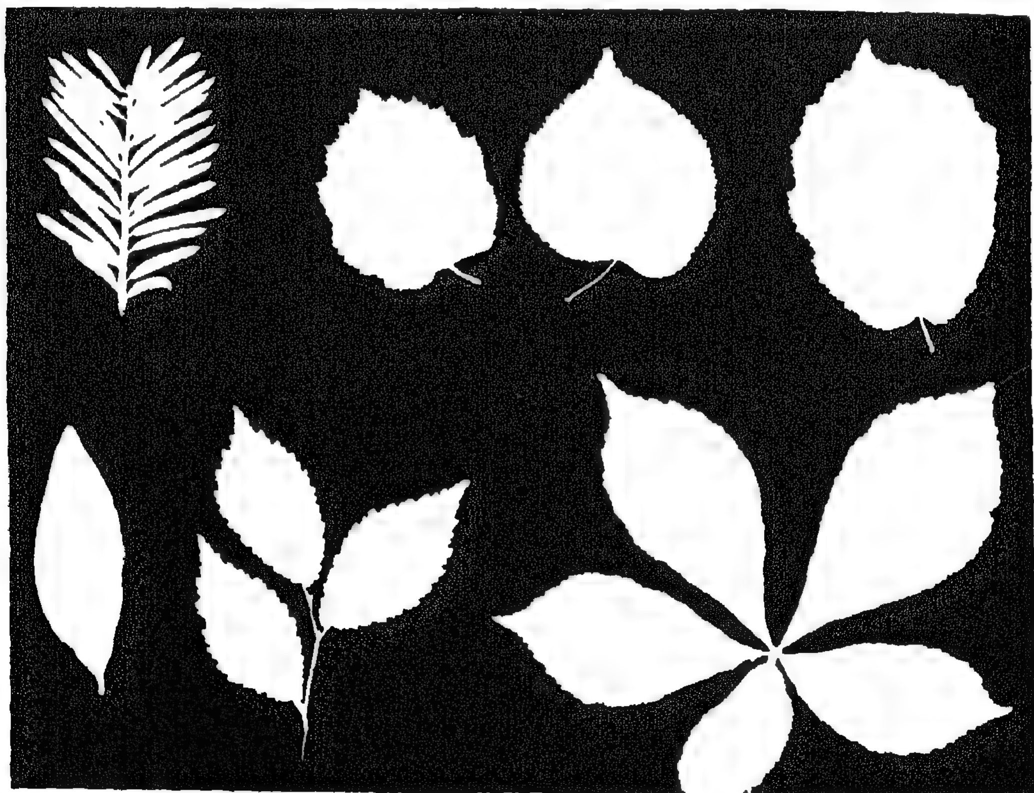
1 2

Leaf Prints

1 ASH compound pinnate leaf formed late in the year, with fewer leaflets than in full summer
2 ELDER

noticing the heaviness of the shadow cast, (2) by exposing strips of sensitised paper and counting the number of seconds it takes for the paper to become quite black, or alternatively, to see how dark the paper becomes in a certain number of seconds.

The same value can be attached to the shape of the leaves in Groups III and V Here the leaves are divided into a number of leaflets arranged either like a feather (*pinnate*) or like the fingers of a hand (*palmate*). It is thought that these patterns have arisen from the two types of indented forms such as the Oak and Sycamore, through the lobes having become so deep that they reached the *midrib*, or mid-vein, which thus became a stalk. If we want to be certain whether we are looking at a flat branch of leaves (Elm, Yew) or a leaf composed of many leaflets (Ash) we look for axillary buds The axillary bud of the Ash is between the base of the whole leaf and the stem, whereas each narrow leaf of Yew has an axillary bud at its base Leaves which are divided into separate leaflets are called *compound*, in contrast to the *simple* leaves first described



LEAF PRINTS

1 YEW note axillary buds near tip of spray 2 BIRCH 3 LIME 4 HAZEL. 5 CRACK WILLOW 6 ELM note that one lobe of a leaf is larger than the other, and the axillary buds on the spray 7 HORSE CHESTNUT a compound palmate leaf, formed in late summer with only five leaflets

(Nos 1, 2, 3, 4, 5 and 6 are simple leaves All the leaves have sawlike edges—serrate—except 1 and 5 which are entire)

In the case of the long narrow leaf of the Willow in Group VI., the shape probably serves the same purpose as the division of other leaves, since these narrow (*lanceolate*) leaves allow light to pass freely between them

II. Summarise the characteristics noticed, referring again particularly to the placing of the leaf stalks and the shapes of the leaves as being connected chiefly with the reception of light.

III. If it is desired to discriminate between particular leaves which the children have difficulty in recognising, draw attention to differences in arrangement of veins, in texture, i e thickness, roughness or smoothness, and to differences in the detailed appearance of the margin, which may be deeply toothed (*dentate*), or sawlike, with fine teeth (*serrate*), or smooth (*entire*). For instance, many people confuse Beech and Hornbeam, which have rather similar long buds, but in all other details the trees are different. The leaves of the Beech have a glossy surface, and a smooth, wavy edge, while the Hornbeam has the margin doubly serrate.

IV. *Records.* The children should select *one* twig which should be accurately drawn to show the position of the leaves, the way in which the leaf base grows from the stem, the bud in its axil, and one or two complete leaves They may then either make drawings of selected leaves to show the different characteristics discussed, grouped to illustrate the classification adopted, or mount and label pressed leaves in the same way. By inserting a leaf between a glass plate and a piece of sensitised photographic paper, they may make prints of leaves which bring out the shape and the character of the margin very clearly. This can be done by holding it against a window pane until it is dark enough to please individual taste, brown tones give a clear impression, and are pleasanter because less harsh than the black If a photographic frame or small plate is used it is easier to judge when the best result has been obtained. The print is then fixed according to instructions supplied with the paper Unless special sizes of paper are ordered, small leaves must be chosen. It will be noticed that these sometimes show less distinctive features than the larger leaves

IV. LEAF FALL

Aim.—To understand something of the value and causes of the fall of leaves.

Material.—Some coarse leaves, e g Sunflower, Rhubarb, Burdock Several twigs of Horse Chestnut and Sycamore Several twigs of Laurel or Rhododendron

Introduction.—Prepare the way for a class lesson by drawing the children's attention to the gradual thinning of the trees, and the changes in colour which precede the heavy fall It will be noticed that the onset is gradual, it may even be seen in the height of summer (Elm leaves) and before any colour changes occur But the process is nevertheless characteristic and often sudden in the autumn Keep a class chart on which the names of any fallen leaves found are entered (with the dates) as they occur, and whether they are green or have changed colour, describing the colours as exactly as possible It is not enough to say yellow, brown, red, since each kind of tree has its own distinctive tints. A good plan is to make a colour chart, consisting of little squares in different tones of all the colours to be found in a school paint box, and to

compare leaves found with these squares. Or the children may devote one or more periods to drawing and colouring leaves as exactly as possible, showing by a named chart above each drawing what colours they have used This is a good opportunity for training in exact observation of colour, but it is better left out altogether than treated in a vague and slovenly way.

When extended observations have been made, late in the autumn when the trees are becoming bare, an account may be given to the children of the value and causes of leaf fall. At this stage the work must be chiefly descriptive, but it is possible to arrange early in the autumn term to take a lesson on the water current and transpiration or giving off water by leaves (described later in this course in connexion with the function of leaves), so that the children have some knowledge of this activity. By means of questions recall the observations made, the period over which the process of change and fall had extended, the colours noticed in particular cases, and the connexion between heavy falls of leaves, and wind or frost

I. Explain to the children that as the end of summer approaches, the leaves of trees become less active, and eventually unable to do their work for the tree The green colour which has been present in the spring and summer begins to break up into yellow and red substances which give the leaves their autumn tints At the same time food materials which were stored in the leaves are withdrawn, by means of the veins, into the stem, where they will be available for use again next year The tree is preparing to hibernate, as we have seen that many animals and plants do After its activity of the summer in producing and supporting thousands of leaves, the tree needs a period of rest; and besides the soil is too cold for the roots to take in much water.

Now we have seen that a plant not only takes up water from the soil, but gives it off from its leaves But if these delicate leaves were exposed to the cold frosts they would be killed, while the dry east and north winds of winter would draw out the water, and since no more, or very little, is rising from the roots to take its place, the living parts of the tree would shrivel up So it is very important to the tree that its leaves, no longer of use to it since they are worn out, shall not remain to be a source of such danger.

The children may remark that all trees do not lose their leaves in the winter Would not the danger exist here? In the case of the evergreen trees, which do not lose their old leaves all at once but only gradually after the new ones have formed, the leaves are particularly tough and hard, protected from the drying effect of winds by a special surface. Examples of these might be examined in a later lesson The trees which drop their leaves at one season are called *deciduous* trees It is found that these trees belong particularly to temperate climates, neither to very high altitudes nor to extremes of latitude. At one time the greater part of the north temperate zone was covered by deciduous forests, and even now great expanses of Central Europe are covered with forests of Oak, Birch, or Beech on the low chalky hills (e g Poland), or in Southern Europe of Walnut and Sweet Chestnut. These give place, as we climb higher or pass farther north, to Pine and Fir forests, and eventually to dwarf trees—Birch, Willow and Pine These dwarf trees are covered by snow in the winter and are thus protected from the devastating winds

We come now to the question of what causes leaves to fall. The children will no doubt have noticed that the greatest fall of leaves takes place after frost or strong wind Frost and wind, however, could not make the leaves fall if the way had not been prepared by the plant itself After the green colour has given place to autumn colours, and the food has all been withdrawn, minute blocks or plugs of cork begin to be formed just where the leaf stalk enters the stem.

The plugs fill the cavities of all the veins in this position, and eventually form a thin plate across the stalk At the same time the substance of the leaf stalk immediately outside the cork layer becomes spongy and loose, so that the leaf is actually separated from the stem by this change in structure, and will fall of its own weight, though it can be hastened by wind, or by frost if water penetrates the loose substance and is frozen, for the frozen water expands and so loosens the joint still further This layer of cork and loose substance is called the *absciss* layer, or cutting-off layer The plugs of cork prevent water from passing out from the tiny wounds left by the fallen leaves, for otherwise the tree would still be in great danger. The cork is in the nature of a healing substance, but it is formed *before* the leaf is removed.

If twigs are examined in autumn, small plugs of cork, in the form of light brown or grey dots or streaks, will be found projecting from the surface at intervals These plugs serve the same purpose in filling the breathing pores of the stem, which would otherwise be a source of loss of water We cannot over-emphasise therefore the importance of this safeguard.

II. Cut across the leaf stalk of any plant of a coarse nature (e g. Sunflower, Hollyhock, Rhubarb) to show the veins, which appear as dots, and cut another piece vertically to show their course They may first be dipped in red ink and left for a day. Then separate from its stem a Laurel leaf, or a Horse Chestnut leaf, and show the new scar, with the points at which the veins enter. In the Horse Chestnut the cork plugs can be seen as white or yellowish dots, in the Laurel no cork is formed, but the veins can be seen. Let the children examine and draw the leaf scars of the Horse Chestnut, Sycamore, or Lime, to show these *leaf traces*, and the plugs of cork which fill them

V. WINTER TWIGS

Aim.—To trace from the bare twigs some events in the life of the tree.

Material.—Twigs of the Horse Chestnut, Sycamore, Ash, Oak, Beech, Lime and Elm. It is not necessary, however, to make a study of all these forms, and others may equally well be substituted They should illustrate different types of leaf arrangement

Introduction.—Suggest to the children that when one has some familiarity with trees it is possible to find out a great deal about the past history of particular twigs by an examination of the characteristics which can be found when the leaves have gone. But to find out anything of the general history of a tree we should have to examine a great many twigs, since each twig shows the effect of particular conditions, which may not have influenced the whole

I. Show the class, if possible, twigs taken from different parts of the same tree, e g. Horse Chestnut twigs which grew fairly high on the outside of the crown, and others which grew low down underneath. Pass them round and let the children notice the differences Those which grew under the tree are short, thin, and wrinkled, because they are surrounded by small rings very close together The markings where the leaves were attached are also smaller, so they must have borne smaller leaves Ask how this difference in appearance can be explained. The children know that it is important to a tree to receive light, so

probably this stunted growth, with small leaves, is due to its being shaded from the light

Another reason may be that the smaller twig obtained less food from the roots, since those twigs which are nearest to the great main branches will receive a better water supply than those which are at the extreme end of a much subdivided system. (If we pour water down a little channel most of it goes down the main channel and only a little trickles into smaller channels at the sides)

Sometimes, where trees are used as a windscreen or tall hedge, e.g Lime and Ash, it is possible to obtain the twigs which are cut down each autumn. The whole top of the tree is lopped and these twigs grow afresh each year. They derive their food direct from the main trunk, and they are not over-shadowed by great branches If these are compared with twigs from a normally branching tree they will be found to be exceedingly long, straight, and strong, with no "annual rings" The same thing will be noticed if shoots are taken which have formed the brushwood at the base of an old Elm or Lime Tree—trees which have a tendency to form such growths from dormant buds

Such illustrations will be enough to prove to the children that twigs have individual characteristics, though there are certain points by which we can recognise each kind

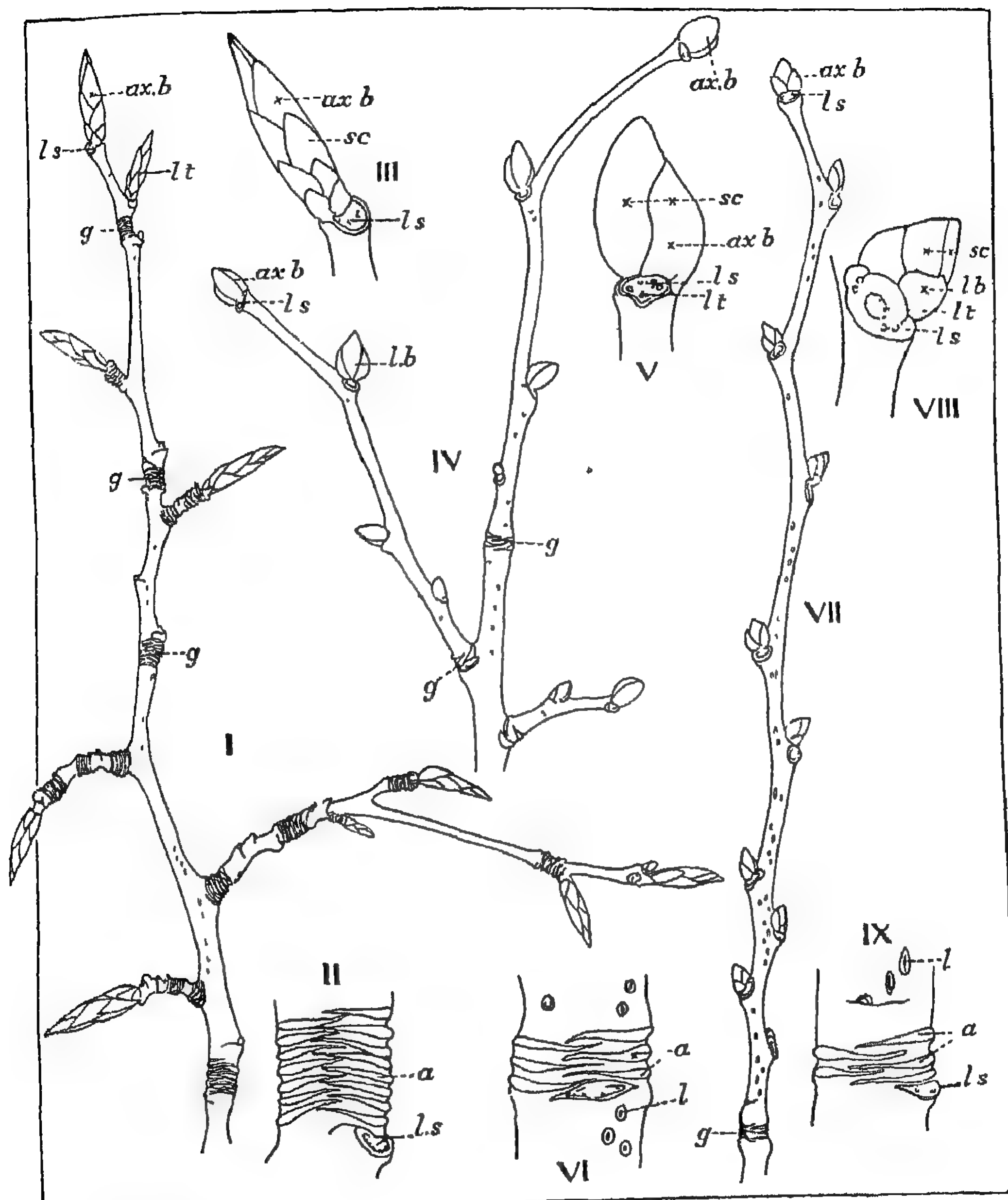
VI. DETAILED STUDY OF TWIGS

THE foregoing discussion and observations would lead to a study of the characteristics of particular twigs. The Horse Chestnut is here dealt with as an example, and notes are added on the special characteristics to be looked for in some other common twigs Let the children examine well-grown Horse Chestnut twigs, and ask what are the most striking features The "sticky buds" are sure to be first mentioned. Ask how they are arranged. There is a large one at the top and many smaller ones Is there a large one at the top always? (No, in some cases there are two, not quite so big as some of the single ones) This is a puzzle Can we find out any more about them? It may then be noticed that pressed between the two buds, and indented in the middle, there is a curious, light-coloured plate or scar What does that mean? If we find a scar, what does it usually tell us? In a previous lesson it was seen that when the leaves fell away they left a scar, covered by a plate of cork Is this a leaf scar? If it is, it is in a curious position, and it has no vein markings or *leaf traces* What should we expect to find in that position? (A bud) Ask if the children can think of a particular kind of bud which might, in the end, fall away. If it does not occur to them, tell them that this is where the flower grew, and developed into a fruit What happened to the fruit? (It fell away and left this scar.)

Hold up before the class a twig with two buds at the end, and a twig with only one. It will be noticed that the single bud is pointed; the double buds are much blunter and thicker in proportion These, again, are flower buds, this is, in fact, a flowering shoot If a sufficiently long branch can be observed (on the tree, for instance) it will be seen that year after year the same thing has happened, the end bud has flowered, formed fruit, and been replaced by two side buds which have also developed flowers.

Now look at the arrangement of the buds on the stem There is an end bud, or *terminal* bud, and a number of side, or *lateral* buds. These buds are arranged in pairs, and each

PLATE IV.



WINTER TWIGS 1.

BEECH I Showing *ax b*, axillary bud, replacing terminal bud; *l t*, lateral bud, *l s*, leaf scar, *g*, girdle scar II Annual rings, (*a*), *l s*, leaf scar III Axillary bud (*ax b*), *sc*, scale leaves, *l s*, leaf scar

LIME IV. Showing *ax b*, axillary bud, *l s*, leaf scar, *l b*, lateral bud, *g*, girdle scar V Axillary bud (*ax b*), *sc*, scale leaves, *l s*, leaf scar, *l t*, leaf trace (broken ends of veins) VI Annual rings (*a*), *l*, lenticels

WYCH ELM VII Showing *ax b*, axillary bud, *l s*, leaf scar *g* girdle scar VIII Lateral bud (*l b*), *l s*, leaf scar, *sc*, scale leaves, *l t*, leaf trace IX Annual rings (*a*), *l*, lenticel, *l s*, leaf scar.

N B The terms "axillary band and "lateral bud" are interchangeable

pair is at right angles to the pair above or below it. (This plan is called *decussate.*) Further, each bud grows exactly above a leaf scar, hence it was in the axil of a leaf It may, therefore, be called either lateral or axillary.

Each bud is covered by a series of scales, a small pair at the base, then larger ones, overlapping one another, and protecting the bud very closely from wind and frost, and from the attack of "disease germs", (i e bacteria and spores of fungi) and from burrowing insects such as beetles and flies on the look out for places to lay eggs, for we must remember that the buds are formed long before the leaves fall The scales are made all the more efficient by being glued down by a sticky, resinous gum, which gives the glossy appearance to the buds. The buds vary in length from ½ in. to 1½ in. high up a tree, and are oval with a pointed apex.

Notice the shield-shaped leaf scars, which tell us how many leaves the twig had, and whether they were large and well-grown, or small and stunted The first and last formed leaves have usually only five leaflets, the fully developed ones have usually seven, sometimes eight or nine. How can we tell how many leaflets a particular leaf had? The leaf scar has one leaf trace or vein ending for each leaflet, representing each mid-vein The cork plugs have already been noticed in a previous lesson Sometimes we may find that the leaves are not exactly in pairs, but that one scar is a little lower than the other

Draw attention to the raised pale brown dots on the stem. These, as explained in a previous lesson, show the position in the stem of pores which are used both for breathing and giving out water. (They are called *lenticels*) Notice, again, that they, too, are stopped with cork.

Now look at the so-called annual rings encircling the stem. On a well-grown twig they may occur only at intervals of two or three feet, while on a very stunted one they are so close that there is hardly any space between them On careful examination it will be seen that they are not rings at all, but pairs of narrow crescentlike scars, each tapering to a point where it nearly, but not quite, joins its neighbour. There will be found three small dots which are evidently the marks of veins. These pairs of narrow scars are arranged exactly in the same way as the foliage leaf scars They are, in fact, the scars of the leaf bases which form the scales covering the winter buds We call them, therefore, *bud scale scars* Sometimes one can find a tiny foliage leaf growing out from the top of one of the outer bud scales, proving that it is actually the base of a leaf, in which the growth of the blade has been checked, so that it can perform its particular service.

I. By means of an annotated drawing, let the children make a careful study of a particular twig, and then answer the following questions below the drawing

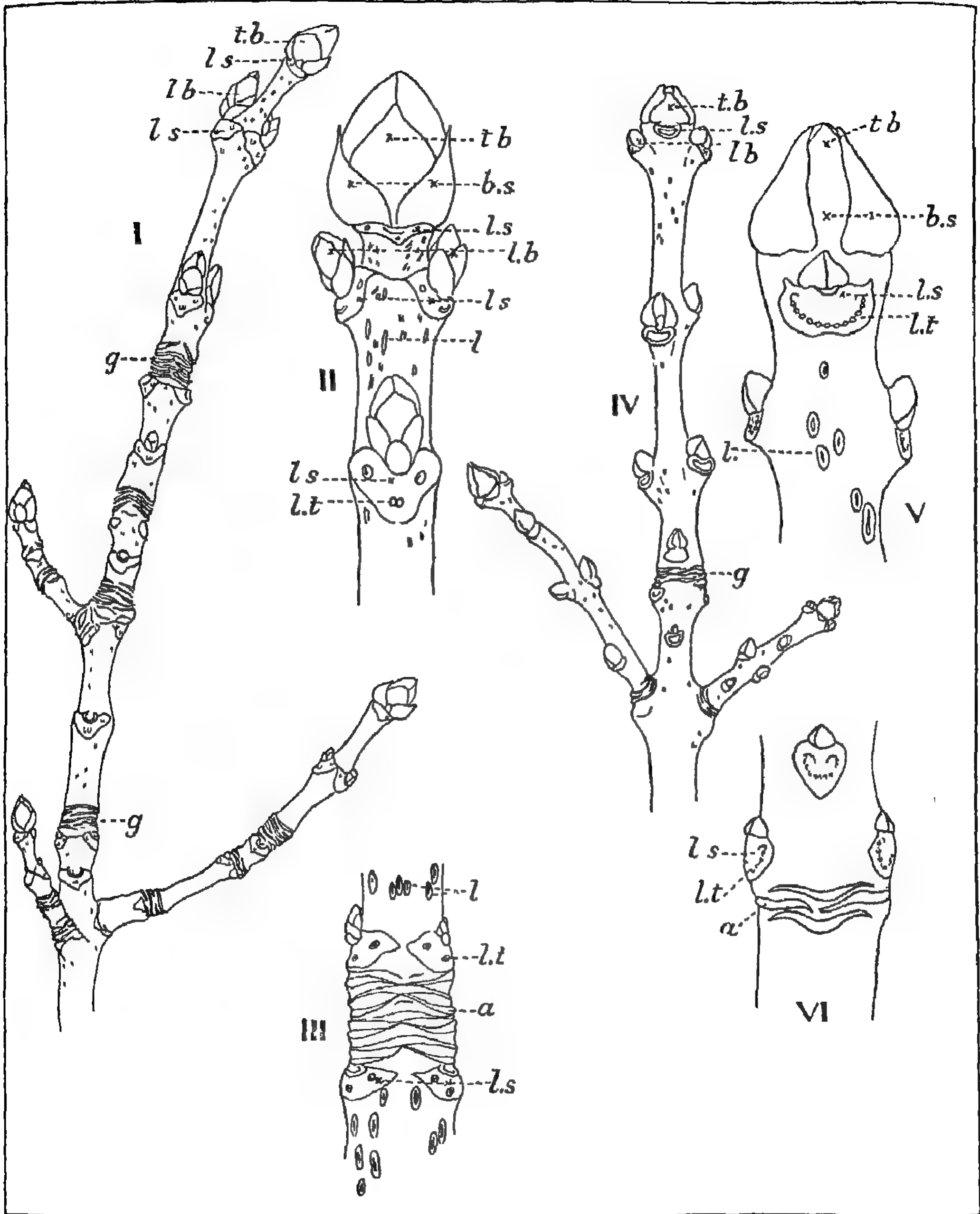
(1) Is your twig a flower-bearing shoot or has it borne only leaves?
(2) How old is your twig? How much did the stem grow in length last year?
(3) How many leaves did it produce? Were they all fully formed? (Seven leaflets are found in a fully formed leaf.)

II. The twigs should be kept in water through the winter. The water needs to be frequently changed, as it soon gets foul If kept in a warm room the buds can be forced so that they open by the end of January, and the stages in unfolding can then be watched.

At least one detailed study of a twig developing from axillary winter buds only should be made, e g Lime or Beech. Elm buds are rather small for detailed study.

The Sycamore, Ash and Oak.—The twigs of these trees develop from terminal winter buds, though in the case of the Oak the closely clustered axillary buds immediately

PLATE V



WINTER TWIGS II

SYCAMORE I Twig showing 5 years' growth *t b*, terminal bud; *l s*, leaf scar, *l b*, lateral bud, *g*, girdle scar (annual rings formed by bud scale scars) II Terminal bud (*t b*), *b s*, bud scales, *l s*, leaf scar, *l b*, lateral buds, *l t*, leaf trace (broken ends of veins), *l*, lenticels III Annual rings (*a*), *l s*, leaf scar, *l t*, leaf trace, *l*, lenticels

ASH IV Twig showing *t b*, terminal bud, *l s*, leaf scar, *l b*, lateral bud, *g*, girdle scar V Terminal bud (*t b*), *b s*, bud scales, *l s*, leaf scar, *l t*, leaf trace, *l*, lenticel VI Annual rings (*a*), *l t*, leaf trace, *l s* leaf scar

below the terminal bud are almost as important. It is due to their growth that the Oak has such tufted masses of foliage clustering at the ends of the branches, and the gnarled appearance is partly due to the same habit.

In the Sycamore the buds are green, the leaf scars crescent-shaped with only three leaf traces, and the stem is grey or greyish-green to light brown In other respects the leaf and scale arrangements resemble the Horse Chestnut, though on a smaller scale. The buds, at most less than ½ in long, have all the scale tips projecting very slightly, so that they have a less smooth appearance than those of the Horse Chestnut

In the Ash the bud scales are dull black, all arising from the base and reaching to the top. Only two pairs can be seen externally. The stem is greyish, and distinctly flattened at the nodes where the axillary buds arise These are usually very much smaller than the terminal bud, which is immediately subtended by a small pair

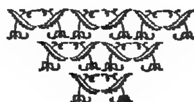
In the Oak, where the buds are well defined, it can be seen that they are covered by numerous small, light brown scales overlapping one another The internodes near the tip are shortened, so that the lateral buds appear to be produced in a circle or whorl In reality it is a close spiral Lower down, at longer intervals, there are small, separate axillary buds at the nodes The bud scale scars are in groups that correspond to the clustered buds, so that each twig has a gnarled thickening which marks the end of each year's growth, with a bunch of twigs, varying from two to seven, growing out from it.

The Beech, Lime and Elm.—These represent the group of trees in which an axillary bud replaces the terminal bud each summer, so that no terminal winter bud is developed, and growth in the spring takes place entirely from axillary buds They are simpler in the arrangement of their leaves and buds, which grow round the stem spirally, and not in decussate pairs In the Beech, however, the scales which cover the elongated brown buds are in pairs, but this is because they are formed from paired outgrowths from the base of the leaf, or *stipules* In this respect they differ again from the previous group, where the scales are leaf bases (In a few trees, e g Lilac and Elder, the winter buds are protected by small, hardened leaf blades)

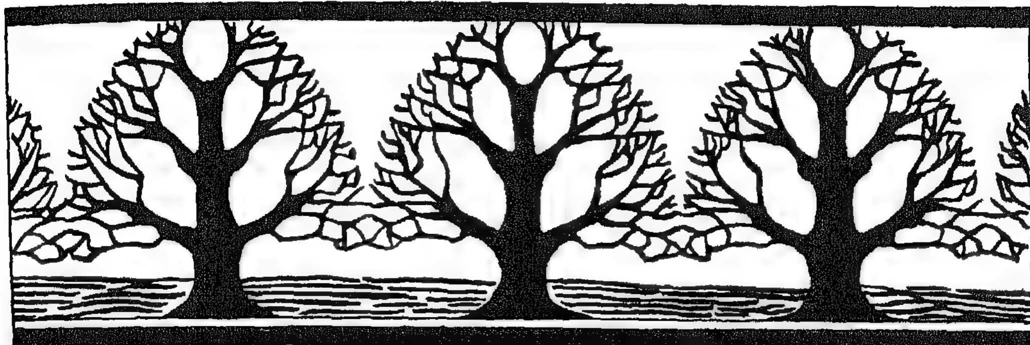
The slender brown stems and spindle-shaped golden-brown buds of Beech are well-known. Below each bud there is a shelf-like triangular leaf scar bearing three leaf traces. The scale scars are fine raised lines arranged very closely one above the other, each arising on the opposite side to the one below it, but almost encircling the stem

The buds of the Lime are generally crimson on the side exposed to the light, and green on the shaded side The buds are oval, but drawn out into an apical point, and flattened against the stem. There are two stipular scales, sometimes an additional small one on the outside. Consequently, the scale scar marking each new year's growth is, in this case, one ridge, formed by the pair of stipules, thickened on one side more than the other

In the Elm two kinds of buds are found, very small pointed ones which contain foliage leaves only, and larger, almost round flower buds, which open before the leaf buds The twigs are slender and much branched



VII. TREE FORM IN WINTER



Aim.—To examine the framework which underlies the summer appearance of some common trees in order to be able to recognise trees in winter

Material.—Several kinds of trees might be examined in one expedition If young trees are available in a plantation, in the school garden, or along a street, a second study of these might be made later

Introduction.—Remind the children of the trees they looked at in the summer, and ask for any outstanding points by which they might be recognised Suggest that it would be interesting to see what sort of skeleton or framework trees have, now that the leaves have fallen and the trunks and branches can be plainly seen Tell them where it is proposed to go, and then take out the class as before

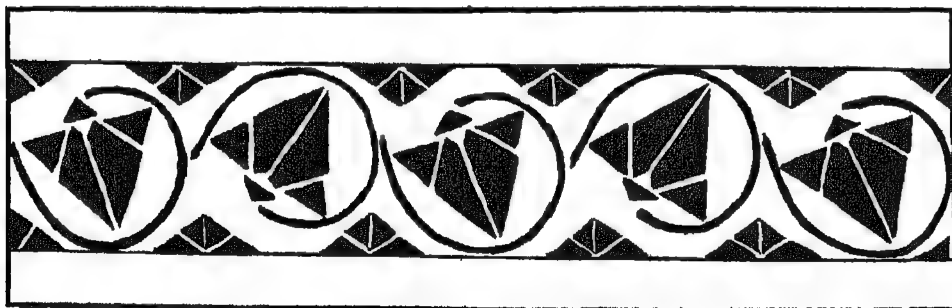
The Common Elm.—These trees might be first examined Looking at the trees once more against the skyline, notice again the shape of the space they would fill, the trunk ascending right to the top, and the height at which the lower branches are found Now notice that all the main branches seem to be approximately equal in size, and very short compared with, say, the Horse Chestnut or the Beech. Notice the angles the branches make with the trunk, are they horizontal or inclined upwards? Now look at the pattern made by the twigs against the sky It is very delicate, "like lace" as a child said The children will remember the much branched, fine twigs, and numerous small buds If it is possible to compare the Common Elm with a Wych Elm, the same kind of light tracery will be seen, but the tree is differently shaped It appears to be fan-shaped, with long straight branches inclined steeply upwards, the top being curved. The main trunk, instead of shooting up undivided to the top of the tree, divides very low down into two, three or occasionally more main branches, which would make acute angles with the main axis if this were produced, these give off in their turn only comparatively small branches, spreading out to make the crown The gaps in the branches can be plainly seen in the bare Common Elm, the habit of shedding large branches does not seem to characterise the Wych Elm, though twigs are freely shed If possible compare these trees with Lime and Beech trees.

The Beech.—This tree varies very much according to its surroundings. If it stands

in a wood it will be tall, not beginning to branch till quite high up (though in many cases the lower branches have been lopped) But where it can develop freely, the Beech branches at a height of four or five feet, sending out curved massive branches to bear the heavy canopy of leaves, some of the branches horizontal, or bent downwards, the rest inclined upwards at various angles The smaller branches and twigs spread out in shelves more or less horizontally, and the tips of the branches turn upwards The long buds give the tree a particularly graceful shape when seen against the sky

The Lime.—This tree has a rather less dense effect, which is due chiefly to the arrangement of the buds Fewer buds develop than in the Beech, and their axes grow out at a wider angle from the stem which supports them, so that all the new twigs are widely spaced Similarly, the main branches spring out from the trunk at wide angles It is this that gives the Lime its free, light appearance Nothing is crowded Branching does not usually begin quite so low down as in the Beech and Elm. Trees that are not very old (30–40 years) have a rounded crown, but there is a tendency for older trees to grow tall in proportion to their width (though this is not always so) Another feature of old trees is the development of bushy outgrowths, not only at the base but at different heights up the trunk, and these often cause large bosses to form which interfere with the shape of the trunk The trunk itself is often flattened on one or more sides. Very often the bright ruby colour of the buds attracts attention. The tree is grey, often largely covered by a bright green film of minute algae, or with encrusting and tufted grey lichens.

VIII. TREE FORM IN WINTER—continued



In a subsequent expedition it may be possible to try to recognise the characteristics of trees in which growth takes place from terminal buds. It will be noticed in most cases (except perhaps some of the Maples) that the growth in this case is sturdier, not quite so graceful, and a little more rigid

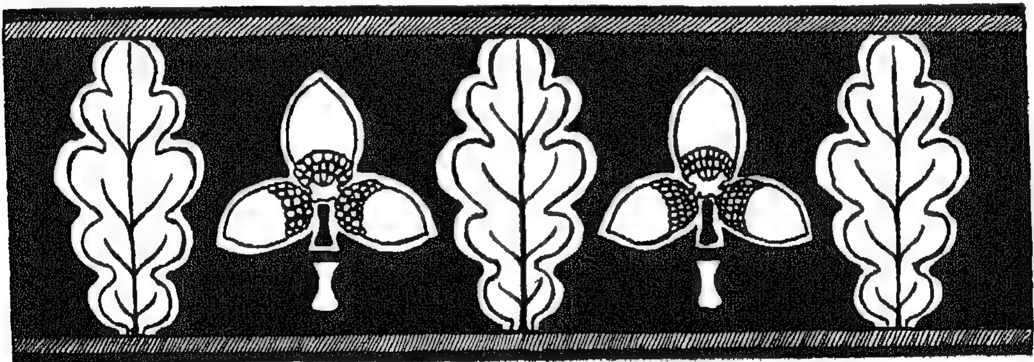
The Horse Chestnut.—A good many main branches spring close together from the trunk, a little higher up in proportion when compared with the Beech Those branches, which bend laterally, may curve downwards, but the twigs tend to turn sharply up, bearing the strikingly large buds clear of the tree

The Ash.—This tree may have a similar silhouette, but the flattening of the twigs at the nodes gives them a curiously stiff appearance, and the buds are smaller and do not glisten.

The Oak.—In this tree there is a considerable variation in form, according to its situation and age, but the branches are usually wide spreading and the dome rather flattened, branching begins low down and several important branches at once bend sharply outwards. A marked characteristic of the branches is that instead of taking a smooth sweep, they bend and twist in short curves, often along their whole length Many bushy twigs arise in clusters as already described, and so give the periphery of the crown a bunchy appearance.

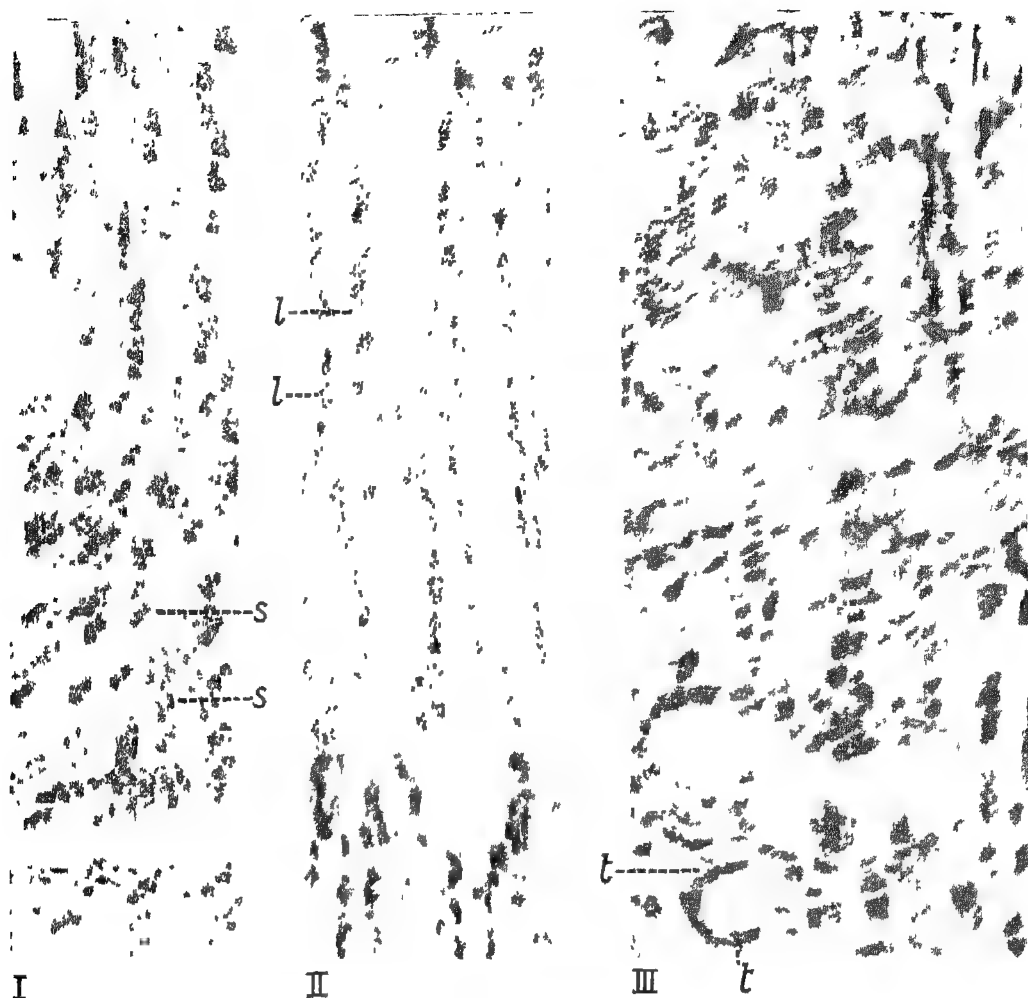
The Sycamore.—In a well-grown tree the majority of twigs at the periphery bear fruits, these are shed and so remove the terminal bud of each year. The axillary buds immediately below take their place, hence the twigs fork. This forking and the thickness of the buds give the tree an appearance of having been clipped all over, the stems seen against the sky seem to stop short suddenly In addition, the twigs make little curves and many of them are very short The tree is grey, and often covered with hoary, tufted lichens Altogether the Sycamore gives an impression of hardiness and strength.

IX. BARK AND WOOD



FOR the study of trees in winter two methods are open (1) each kind of tree may be studied as a whole, beginning with its appearance and branching, and then making observations of the bark, and a classroom study of twigs and fruits, (2) a comparative treatment may be followed, the form of a number of trees compared, their twigs studied together, and an attempt made to recognise the distinctive characteristics of the bark The fruits might then be examined for methods of dispersal (As many fruits have already been dealt with earlier in this series, no lesson is indicated, but two plates of illustrations are appended) The comparative method is indicated here, but if it is followed, care must be taken that children also collect the characteristics of each tree

I. Children find it a great help in remembering the characteristics of the bark of trees if they make a rubbing in the same



BARK RUBBINGS THREE STAGES IN THE FORMATION OF BARK OF LIME

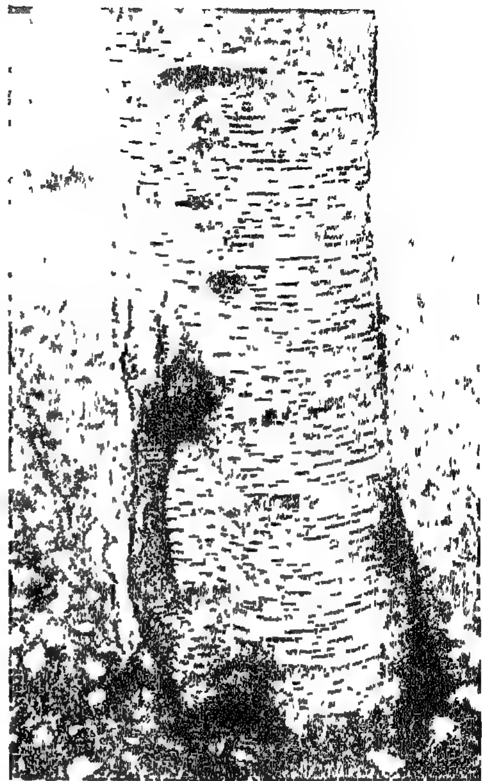
I Cork thickening appears, which splits, forming short ridges (*s*) round lenticels
II The splitting continues, joining the short ridges into long vertical lines (*l*)
III. Transverse ridges (*t*) cut the whole surface up into scalelike plates (From a tree over 30 years old)

way as brass rubbings are made, with heel-ball and thin, tough paper (the kind used with a hectograph or cyclostyle serves the purpose) Two children can work together. The only value of this practice is that before beginning to make a rubbing the children carefully examine the tree, or perhaps several trees, to select a piece of bark which is really characteristic, and therefore in this way their attention is focused upon the features which distinguish one kind of bark from another Unless this selection is made, the work has no value

When a patch of bark for rubbing has been chosen, a sheet of paper is laid upon it and held by both children (or stretched and pinned flat with drawing pins, but the hands are better) and then firmly, but not

roughly, rubbed all over with a piece of heelball (cobbler's black wax, obtainable in little cakes at Messrs Woolworth's Stores). Care must be taken not to tear the paper, yet hard pressure is necessary First efforts are usually too light It must be continued until all the main markings of the bark are clearly thrown up on the paper in black These represent the ridges, the white spaces show the hollows or grooves The sheet is then taken home and coloured naturally in water colour, but the colouring must be paler than that of the actual bark, or the markings will be obscured. Then the sheet is examined and a panel chosen from the best part is cut out, and mounted on a suitable background to throw it into relief The proportions chosen for this panel are important in giving a true impression of the features of the bark Where the bark is in long ridges, a long narrow panel shows its nature best, but if the bark is in scales and broad patches (Sycamore) or has ridges going round it (Birch, Cherry) a broad panel shows it most clearly

I am indebted for this suggestion, which I have found very useful as a help to observation, to a chance conversation years ago with a passing acquaintance who had invented it as a boyish pastime.



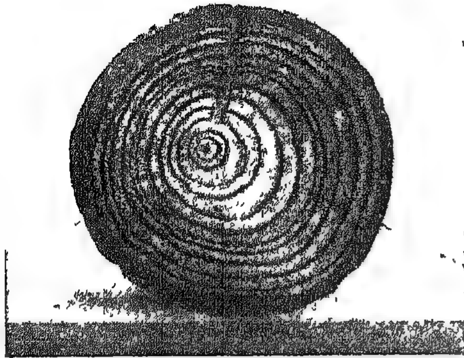
[Photo Henry Irving

TRUNK OF BIRCH, WITH SMOOTH BARK ONLY BROKEN BY NARROW TRANSVERSE RIDGES

II. When a number of trees have been examined, a class period may be given to a discussion of the characteristics of the bark of trees At the same time a brief, simple explanation of the formation of bark and wood may be given.

Reference should be made to the thin green skin which usually covers the stems and roots of herbaceous plants whose aerial parts die down each year. This may be compared with the more rigid character and harder skin of plants which remain permanently exposed to the weather. It will be noticed that even in seedling trees, by the end of the first year the skin has become tough and hard. This is because the substance cork is deposited in the skin by the living tissue of the plant, which makes it. Cork is dead substance, useful to the plant because it contains spaces which hold air This prevents the plant from losing both heat and water, and also protects it from rain and frost Through the holes in the cork the plant is still able to breathe. Cut a bottle cork to show these spaces

At the same time the plant is growing both in height and girth, and forming channels or tubes which run from the roots up the stem into the leaves, where they form the veins Many of these tubes have their walls thickened with wood, which serves both to hold the tubes open and to make the plant rigid. In a tree more and more woody tubes are formed year by year, in rings from the centre outwards The



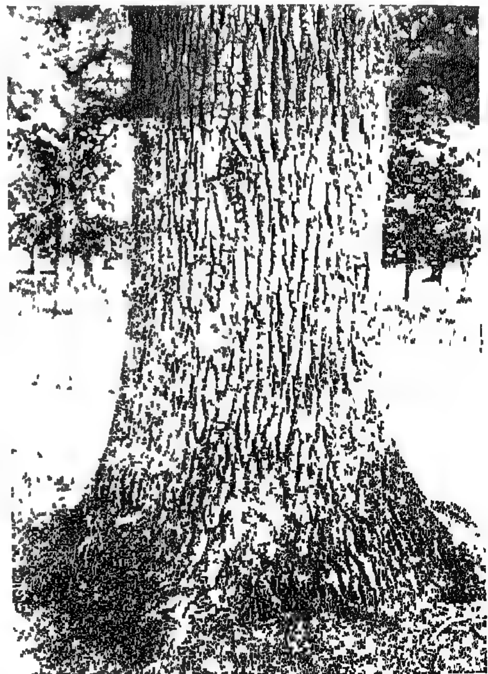
CROSS SECTION OF LARCH STEM, SHOWING ANNUAL RINGS CAUSED BY CHECKED GROWTH IN AUTUMN

oldest ones, in the centre, usually become blocked with bitter substances, forming the heart wood. The substances (such as tannin, which causes the bitterness of "stewed" tea) protect the tree against disease germs and burrowing insects, such as beetles.

In order to show the arrangement of wood in a tree, saw off a small branch of almost any tree (Sycamore, Oak, Apple) and saw it across into a number of pieces. Smooth with glass-paper and then polish one surface of each with a drop of linseed oil on a bit of rag: the smooth surface will show the rings of growth or "annual rings," the light parts caused by the freer growth in the early summer, the dark parts by the closer growth later in the year Probably light coloured radiating lines will also be seen, these are air passages connecting the breathing pores with the wood (*medullary rays*).

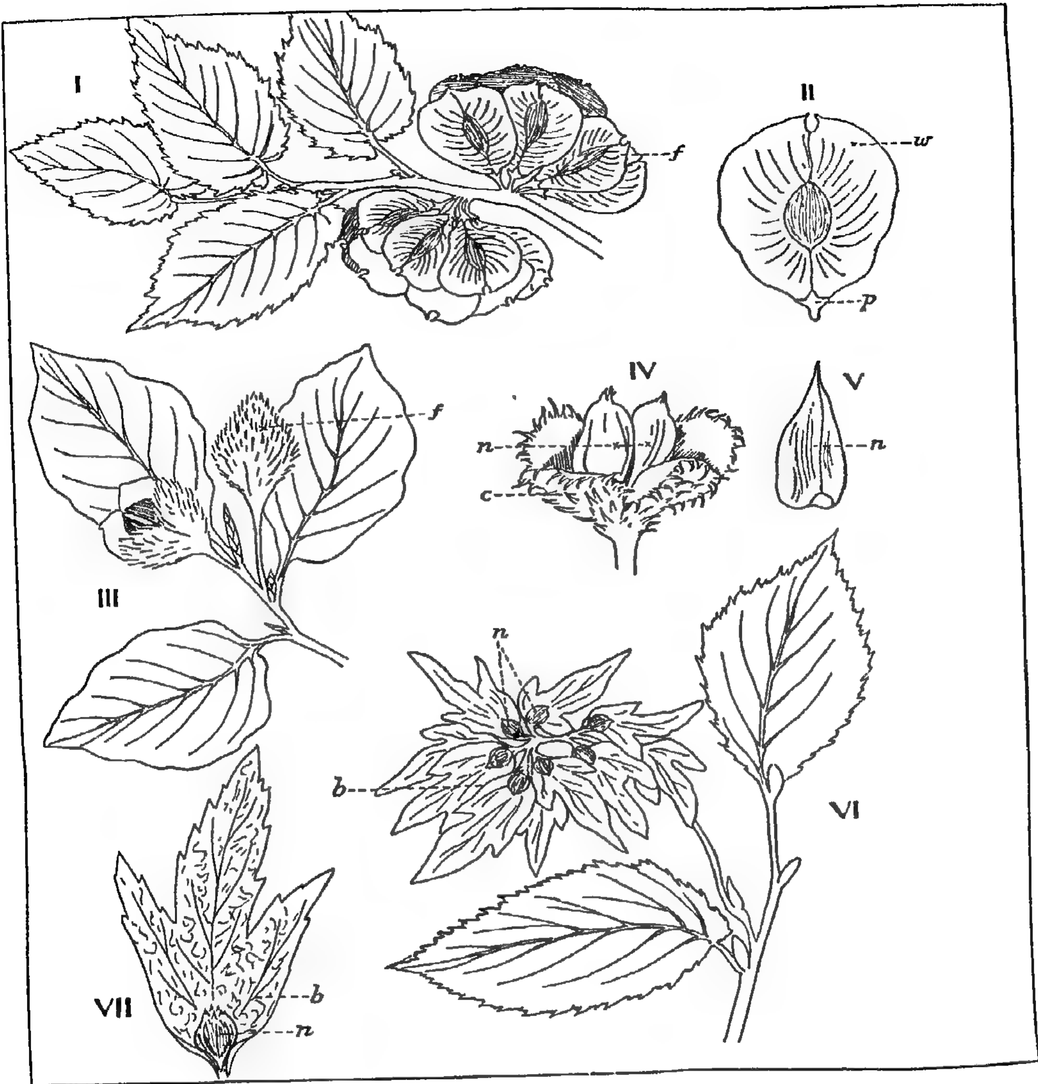
As the wood grows and the tree becomes thicker, the outer skin also becomes thickened, according to some definite pattern which is characteristic of the tree For instance, in a Lime tree, small thick ridges of cork appear round the breathing pores, these spread until they form almost continuous vertical lines, then splits occur, since the dead skin is not elastic and cannot grow These ridges and thickenings finally become so marked that the tree can be recognised by their distinctive arrangement. (See bark rubbings p. 362) As the outer layers split, new layers are formed in the living substance beneath to take their place Bark, therefore, consists of alternate layers of cork and living substance Some trees form a very thick layer of bark, split into deep fissures (Oak, Elm), while others form only narrow ridges of cork (Birch, Cherry, Mountain Ash and Beech) and have thus a smooth skin, with ridges at intervals.

Notice first which trees form spindle-shaped ridges dove-tailed into one another and separated by a network of grooves. Then try to discern the features by which they may be distinguished Ash has a small, neat pattern and the fissures are not very deep; Oak resembles it closely but the grooves are deeper, while an old Oak tree has very deep grooves; Elm tends to have very long grooves, growing irregular as the tree grows older, Walnut has jagged



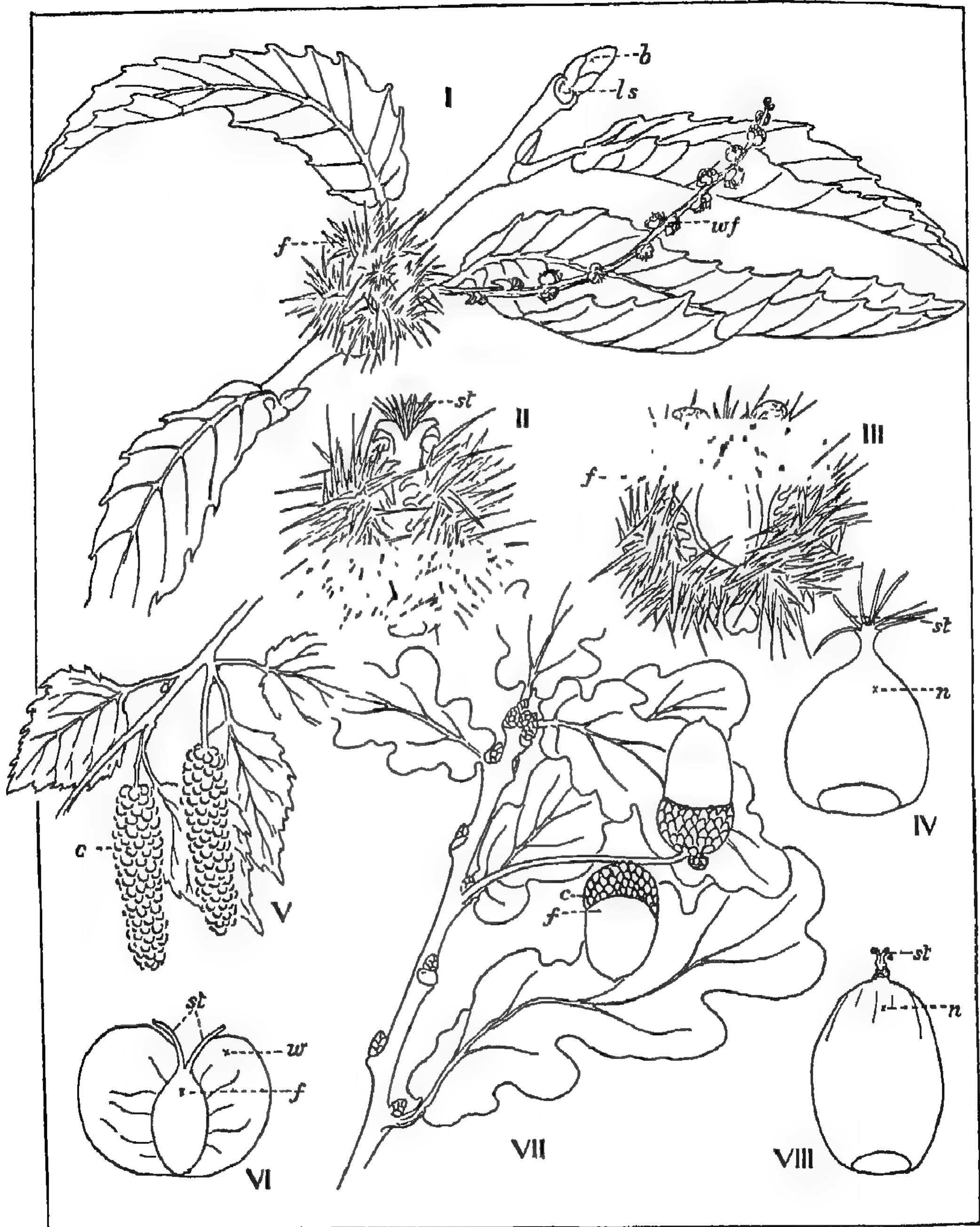
[Photo Henry Irving

TRUNK OF COMMON OAK, WITH RUGGED BARK CONSISTING OF WEDGE-SHAPED RIDGES AND LONG CREVICES



ELM I Spray of fruits (*f*) II Fruit: *w* wing; *p*, perianth
BEECH III Spray of fruits (*f*) IV Fruit open *c*, cupule, *n*, nuts V Nut (*n*)
HORNBEAM VI Spray of fruits *b*, bract, *n*, nut VII Nut (*n*) with bract (*b*)

PLATE VII



SWELT CHESTNUT I Spray showing *f*, fruit, *w f*, withered female flowers, *b*, bud, *l s* leaf scar II Fruit, showing stigmas (*st*) III Fruit case, or cupule, open, showing fruits (*f*) IV Nut, which contains one seed, *st*, stigmas

BIRCH, V Spray showing ripened catkins (*c*), VI Fruit (*f*), *w*, wing, *st*, stigma

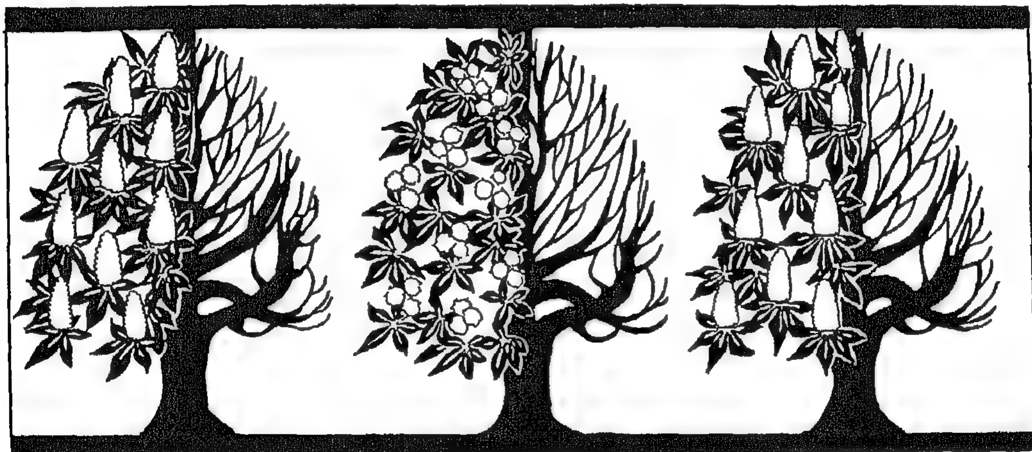
OAK VII Spray showing fruit (*f*) and cup or cupule (*c*) VIII, Nut containing one seed, *st*, stigma

projections from the ridges into the hollows; in Sweet Chestnut the grooves frequently form long spiral lines round the trunk.

Then it will be noticed that some trees have almost vertical ridges and fissures to begin with, and later, these are subdivided by horizontal or curved grooves In a mature Lime there will be short transverse grooves, and the ridges are rather flat, while in Sycamore scalelike plates are formed and these may be irregularly rounded or square In Horse Chestnut, too, circular and square markings vary the pattern of oblong ridges and give an irregular appearance, large areas remaining smooth till late in life.

In describing and grouping together the various kinds of bark, a collection of mounted rubbings, and some photographs of the boles (trunks) of trees are most valuable as illustrations

X. UNFOLDING BUDS



Aim.—To see how the winter buds of trees gradually unfold their leaves, and to notice as exactly as possible what happens

Material.—Horse Chestnut (or Sycamore), Lime (or Beech) Others may also be watched

Method.—As soon as the buds begin to swell, regular observations should be made at short intervals and recorded by each child The best way is to record by a series of carefully labelled pencil drawings, indicating clearly in each drawing what new event is noted, and the positions which scales, leaf stalks and leaves occupy in successive stages Differences in size should be shown by making the drawings of natural size and also giving measurements. Differently coloured scales and leaves could be shown by colouring one of each.

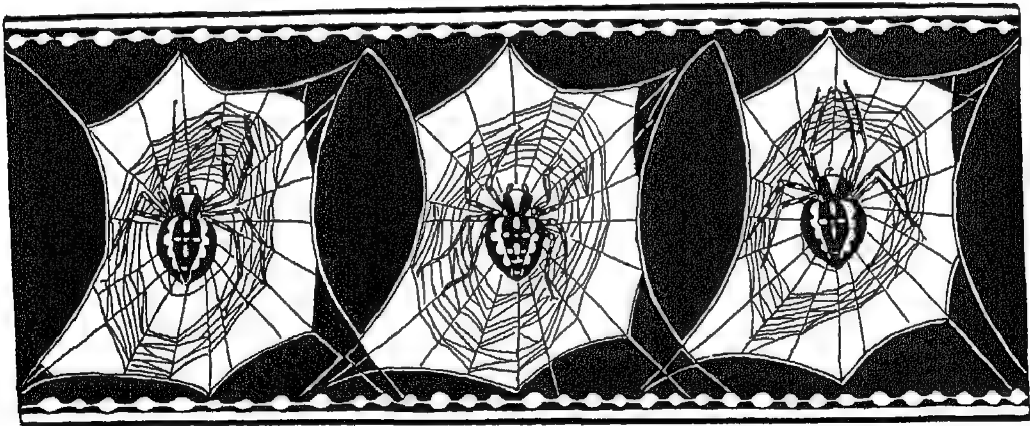
In the Horse Chestnut it would be noticed that as soon as the outer scales began to separate, paler, non-sticky brown ones could be seen, and, as these expanded, some would be seen to have hard, sticky tips, while nearer the centre they become thinner, and green at their base. Next to these are green scales. (Count the number and notice the arrangement in opposite pairs, each

pair at right angles to the next) The leaves are covered with long, white, woolly hairs which retain heat and so keep the bud warm The leaflets are folded upwards along the midrib and pressed close together They gradually separate, then bend backwards, the stalk at the same time moving outwards so that the leaf is drawn away from the centre. The leaflets are seen to be fluted, and their folds are at first pressed close together; later they expand

Notice that in the Sycamore and Horse Chestnut each scale (a leaf base) is separately attached, while in the Beech and Lime the scales (stipules in this case) are attached in pairs to the base of each leaf, the small foliage leaf lying between them.

Notice that the stem bearing all the leaves and scales has grown in length as these changes were taking place, and they measure its growth By marking the stem (as soon as it is large enough) with Indian ink lines at equal distances (say 1 mm) apart, it is possible to see what part of it is increasing in length The scales finally drop away Large numbers can always be found under the trees It is thought that the red colour in scales and leaves (Sycamore, scales of Lime) helps to absorb and retain heat from the sun

XI. GARDEN SPIDERS



IN the warm, sunny autumn days the webs of the Geometric Spiders or Orb-Weavers are suspended on bushes, walls and window panes, wherever a slight current of air may blow flies against their sticky threads; and on misty or dewy mornings, or after rain, the spiral snares are beaded with glistening drops, so that they are attractive and conspicuous objects to study There are so many webs that it is possible to turn a whole class out into playground or garden to watch the spiders, and try to find out how the web is used, and to follow the stages by which it is made As the web takes an hour or more to construct completely, children who are interested will have to watch it in leisure time to see the whole process from beginning to end, but it is probable that some spiders will be actively spinning, and that several stages can be seen

The best known of the Garden Spiders is

the Cross Spider (Epeira diademata) which is marked on the back of the abdomen with streaks and dots of white arranged in the form of a cross, but there are other Epeiras which are nearly as common, but rather smaller, and with different markings One form, which has greyish or white patches edging the back of the abdomen, and an elliptical yellow band on the underside, makes a web with a circular hole in the middle instead of a little platform, while another form leaves a segment of the web incomplete by turning back when it reaches a certain spoke and continuing the weaving in the opposite direction

Spinning and weaving are not correct descriptions of the making of a spider's web, since the thread which is emitted is not twisted, nor are the spiral threads passed under and over the spokes, but pressed upon each other in passing

THE LESSON

1st period

Aim—To watch the making and the use of a spider's web

Introduction.—Speak of the spiders' webs which we notice in the garden so much more in the autumn than earlier in the year, because the spiders are full grown and perhaps also the webs are more in the open. If we look for them, we can find smaller spiders and their webs in the early summer Tell the children that it is the female spiders which make the webs, but that we often find the males somewhere near. Ask what the webs are used for Give the children slips of questions and instructions to guide them, arrange them in groups of not more than four, each child with pencil, pad and paper, and tell them that so soon as they go out into the playground each group should find a good-sized spider's web and watch it carefully. Read through the question slips with the children, then go out and start work.

I. *Directions* Find a spider's web and determine the following points, making short notes and sketches —

(1) How is the web placed and attached?
(2) What is its general plan?
(3) How are flies caught in it and where? Is it all sticky?
(4) Where is the spider? Does it stick to the web?
(5) How does the spider know when the web is touched? What does it do?
(6) Notice anything you can about the actions of the spider Notice its form and colouring
(7) Look for fluffy yellow egg cocoons amongst leaves and in crevices.

The teacher would go from group to group, giving whatever directions seemed necessary. If the children do not seem ingenious in finding the answers to the questions, suggest that they shall touch the spokes, the centre, and the spiral part of the web gently with a pencil, and throw very small bits of leaf or paper against it, to find out which parts are sticky and what the spider does They may not notice, until it is pointed out to them, that if the spider is not on the web, a fine thread may be found running on the under side, from the centre, to a hiding place under a leaf or in some crevice Here the spider will be found with one of her hind feet stretched out to grasp this signal thread, which informs her by the slightest vibration when any part of the web is touched

The children might make sketches to show.

(1) A segment of the web, with part of the framework attached to a leaf, one or more spokes, part of the spiral thread, and the central platform where the spider usually waits;
(2) The centre with the signal thread passing to the spider's hiding place;

(3) The spider with her leg stretched out on to the guiding thread,

(4) The spider "spinning" her web

Note that the thread comes from the end of the abdomen, and that the fourth outside foot is used to hold the thread out while it is pressed into position by the abdomen

2nd period

Aim.—To collect observations and give suggestions for further study where details have not been seen

Introduction.—Let the children refer to the question papers provided for their outdoor work, to see which questions can now be answered

I. Take the questions in order Let the children give the answers, the teacher amplifying or correcting so that the children can confirm them later

(1) The webs are generally found in rather open positions where a current of air reaches them, attached by a framework of silk thread at four or five points to leaves or other supports The webs may be vertical or inclined slightly backwards at the upper edge, towards the more sheltered side The spider strengthens the sides of the frame by walking along each thread two or three times and applying new threads close to the first If a thread is needed in such a position that the spider cannot either walk along to fix it or drop with it, she will stand still and emit a thread which will blow about until it catches a spot that will serve the purpose, when she gives a little tug to tighten it, and runs along it drawing out another thread close beside it, and so strengthening the first Each end of a thread is flattened out and fixed by pressure of the tip of the abdomen In addition the framework is strengthened by short stays at each point of attachment.

(2) When the supports are made, the spider runs to the middle of one of the upper ones and drops on a thread to the other side, where she fixes it She then returns to the middle of this crossline and fixes there a little blob, she continues to the end holding on to the line already made with her third and fourth feet, and holding with one of her hind feet the new thread issuing from her spinnerets slightly away from it As she reaches the circumference she deftly separates the two threads with a quick outward movement of the foot which holds the new one and fixes it to the framework her span's length from the last In this way the spokes are very evenly spaced. She returns down the new spoke to the centre, thus strengthening it She may make several spokes on one side, then several on the other, probably in this way keeping the tension even Where the spokes cross at the centre there accumulates a small fluffy ball of thread, which the spider ultimately appears to eat

Having made all the spokes, she returns to the centre, and then, working outwards, she makes a temporary spiral thread, its turns being close together at the centre, but making a wide mesh, perhaps ½ in. apart, as it extends farther out This is quickly completed, taking perhaps five minutes, and then she probably rests, running down one of the spokes and remaining at the centre for a little while She then returns to the outside edge, and, holding on to the temporary thread, makes the snare, the sticky spiral thread with a close mesh which extends from the margin to within an inch or two of the centre, leaving a non-sticky platform where she can rest She bites away each section of the temporary spiral as she passes over it

(3) Flies are caught on the sticky spiral thread as they fly or are blown against it If they flutter, several strands become drawn together and fix them all the more firmly

(4) The spider may be found on the under side of the platform, with all her legs spread out, grasping the spokes, and the under side of the body against the web. In this

position she would scarcely be able to *see* her victims, since her eyes are on top of her head. She will stay there for hours on sunny days

She can walk on the spokes, and it is also possible that an oily substance covers her feet and prevents them from sticking (Fabre, the great French naturalist, dipped a spider's feet in carbon bisulphide, a substance which will dissolve oil, and found that she afterwards stuck to her own snare)

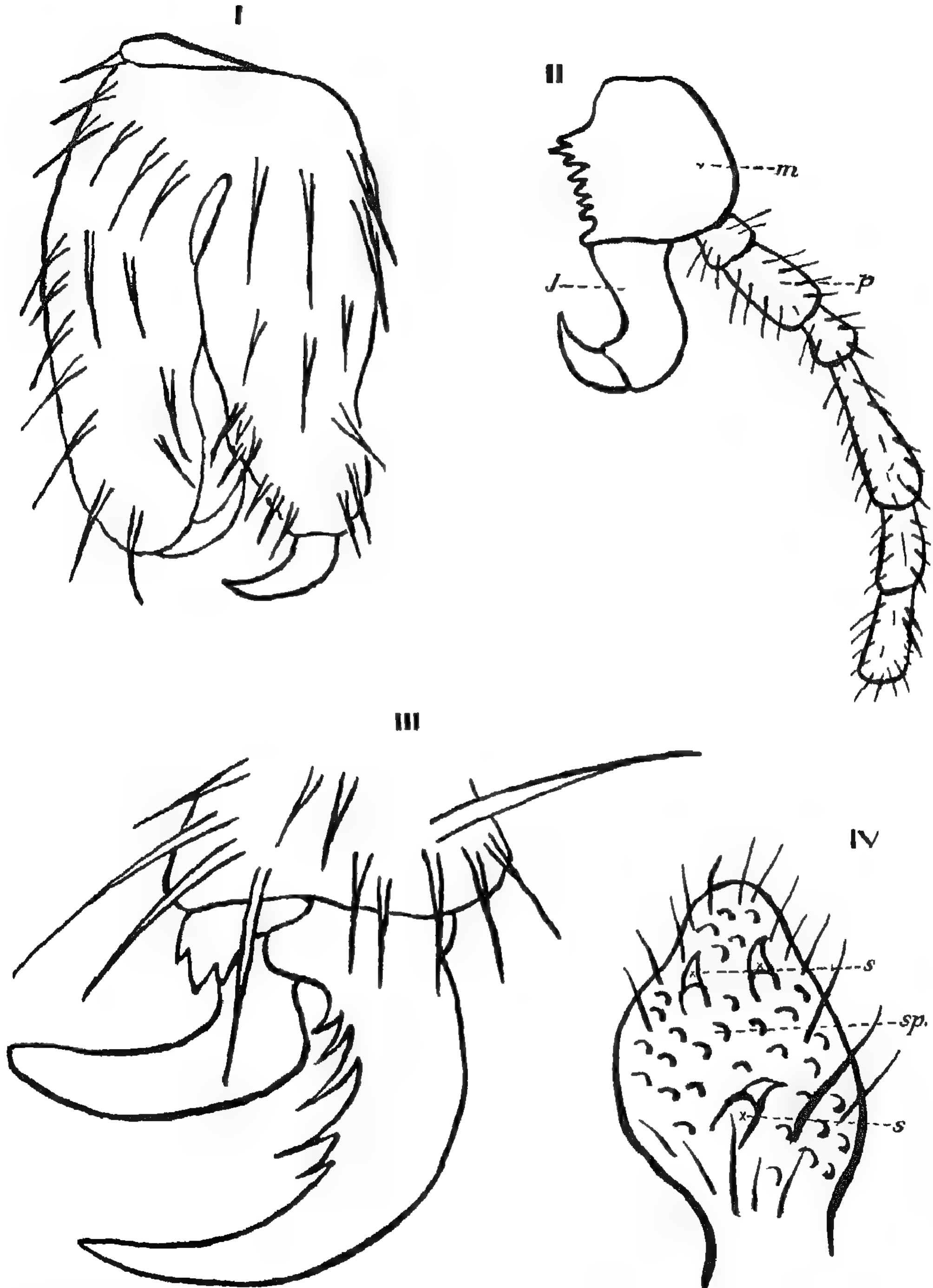
If she cannot be seen on the web, look for the guiding thread already described and follow it to her lair under a leaf The male spider, who can be recognised by his slim body and tiny black clubbed feelers, will probably be somewhere near the edge of the web, especially if the female is in the centre He, too, often has a signal thread attached to the web, but it is to warn him of the movements of the female, whom he is waiting to mate

(5) As soon as the web is touched, it vibrates If the spider is in the centre, she at once runs to the spot from which the vibration began to find out why, if she is in her corner she feels the signal thread vibrate and runs on to the web But if the movement is very slight she does not always come out at once Small flies are often left until there is a number of them, when the spider goes round and bites and sucks them all. A large fly will be poisoned at once by a bite from her jaws, and may then be eaten, or left till she is hungry Though the spider will respond if a bit of paper is thrown on to the web, or it is touched with a brush or a pencil, she does not usually come very far It may be that the lack of any smell tells her that there is nothing to eat Sometimes the spider will be seen to cut away part of the threads which have caught a large fly, so that it hangs down, then she sets it spinning with her foot, and covers it with threads until it is completely swathed, when she will bite it and feed upon it. These hanging flies will often be seen, though it is only occasionally one is lucky enough to see the process.

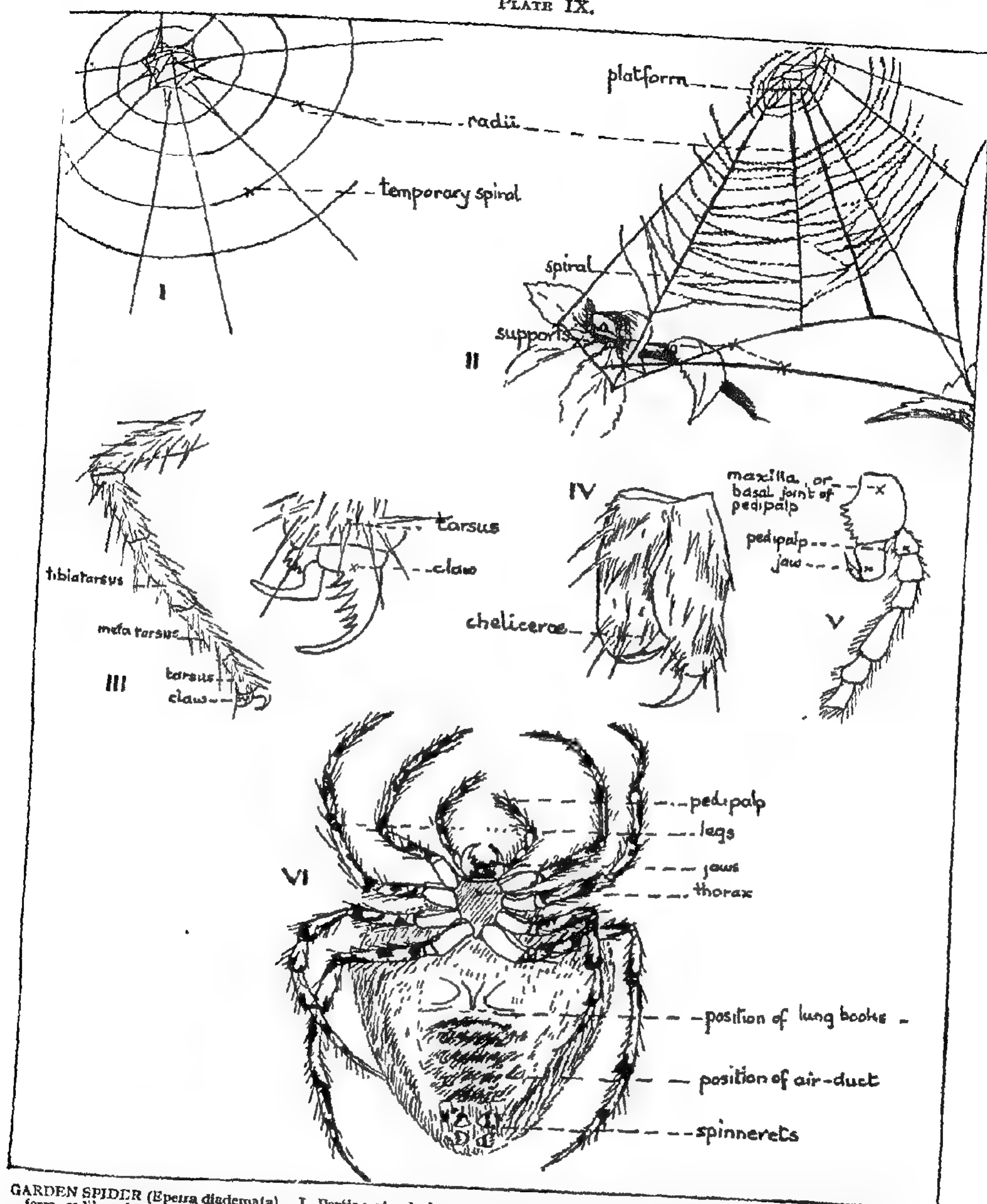
(6) Let the children describe the colour and markings, and the chief points of structure which they can see The spider's body consists of two main parts To the under side of the front part (the head-thorax or cephalothorax) four pairs of legs are attached Each has seven joints, but the smaller ones close to the body are difficult to see, while the white spots give the appearance of many smaller joints The third and fourth pairs of legs end in small claws which are capable of clinging to the thread and bearing the spider's whole weight. A pair of biting and sucking jaws project downwards from the head, flanked by a pair of short feelers. The spinnerets which make the various threads used for the web and cocoon are on the tip of the hinder part of the body or abdomen. The connexion between the thorax and the abdomen is so fine that no solid food could pass, so the spider must live on juices only

(7) In October, a number of eggs are laid, of a light pink colour, wrapped in a warm, loosely woven cocoon of yellow silk, about ½ in to ¾ in across, through which they are just visible These are hidden amongst dead leaves, on evergreen bushes, or in crevices of doors and window ledges, where they usually remain until the warm spring days Then the young spiders hatch out, and spinning their first threads, descend from the cocoons They cannot feed until they have shed their first skins, and they only disperse after this has taken place. Their first adventurous journey has often been described. They will stand on the edge of an exposed bush, or the rim of a jam jar where they have been kept for the winter, and, arching the body and standing on tiptoe in the breeze, will send out streamers of thread which catch the wind and, like thistledown, blow away with the young spiders attached Presently the little spiders settle down, spin minute but perfect webs according to the ancestral pattern which they have never seen, and catch small flies. As they feed and grow, they shed their skins, appearing a little larger after each

PLATE VIII



GARDEN SPIDER (Epeira diademata). I Jaws II Jaw (*j*) with pedipalp or feeler (*p*), *m*, maxilla, or basal joint of pedipalp III Claw IV Spinnerets, *sp*, spools, *s*, spigots The spools emit coarser thread



GARDEN SPIDER (Epeira diademata). I. Portion of web showing temporary spiral and its spacing. II Portion of web showing platform, radii, and supports III Foreleg and claw of spider IV. Enlargement of jaws or chelicerae V Feeler, or pedipalp, and jaw VI. Lower surface of the body, showing position of spinnerets, lung books and air-duct

cast, until by the end of the summer they are full grown Though the majority die, some mature spiders survive the winter and may live two or three years.

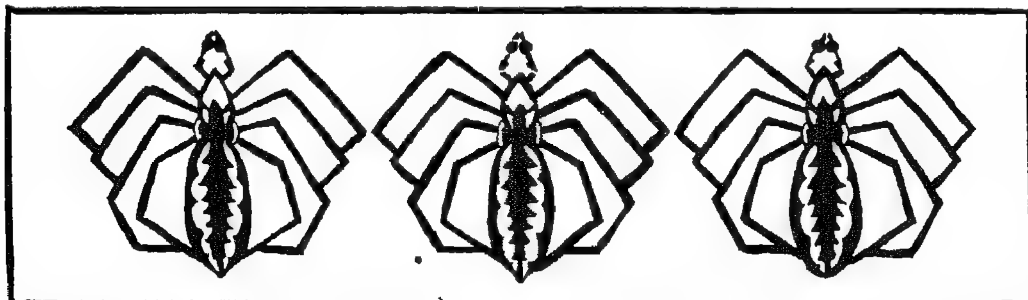
II. Give the children further opportunities of watching spiders at work, especially trying to see how they deal with their victims, and how both the temporary and permanent spirals are made

III. Search for cocoons, and keep them for the winter in jam jars covered with gauze, so that the hatching and dispersal of the young spiders may be watched in the spring It is often possible to persuade a spider to lay her eggs in a jam jar if she is caught about the end of September and supplied daily for a few days with one or two blue-bottles or other large flies

IV. It is usually possible to get a spider to spin a web in captivity if a shallow box about 18 in. square is set up on its side, covered with a sheet of perforated zinc instead of the bottom, and fitted with a sliding glass lid A little jar of leafy twigs should be placed inside, arranged so that the twigs spread widely but not thick enough to obscure the view. Introduce the spider, and place the box in a slight draught from a window, with the zinc side towards the window. Raise the glass lid very slightly (it can be supported on a match stick) so that there is a through draught, but the spider cannot escape Within a day she will generally spin a perfect web, which it is often possible to watch from beginning to end The draught of air is apparently very important; the spider will not spin if the air is still

V. Make an island by inverting a small jar in a bowl of water and place a spider upon it Notice what happens (*a*) in still air, (*b*) in a draught. In still air the spider usually makes no attempt to escape. In a current of air she behaves just as she did when a baby, that is, she throws out fine silken threads which catch in the wind. But she is far too heavy to be borne away on the thread She must wait until one catches a distant wall, or the edge of the bowl of water, just as when she makes the framework of her web As soon as a thread catches, the spider becomes aware of it, and giving a little tug to test its firmness, slips out upon it and crosses to safety (On one occasion a spider was seen to step out upon the water and *paddle* across, thus showing unusual adaptability, for spiders seem to be characteristically creatures of instinct.)

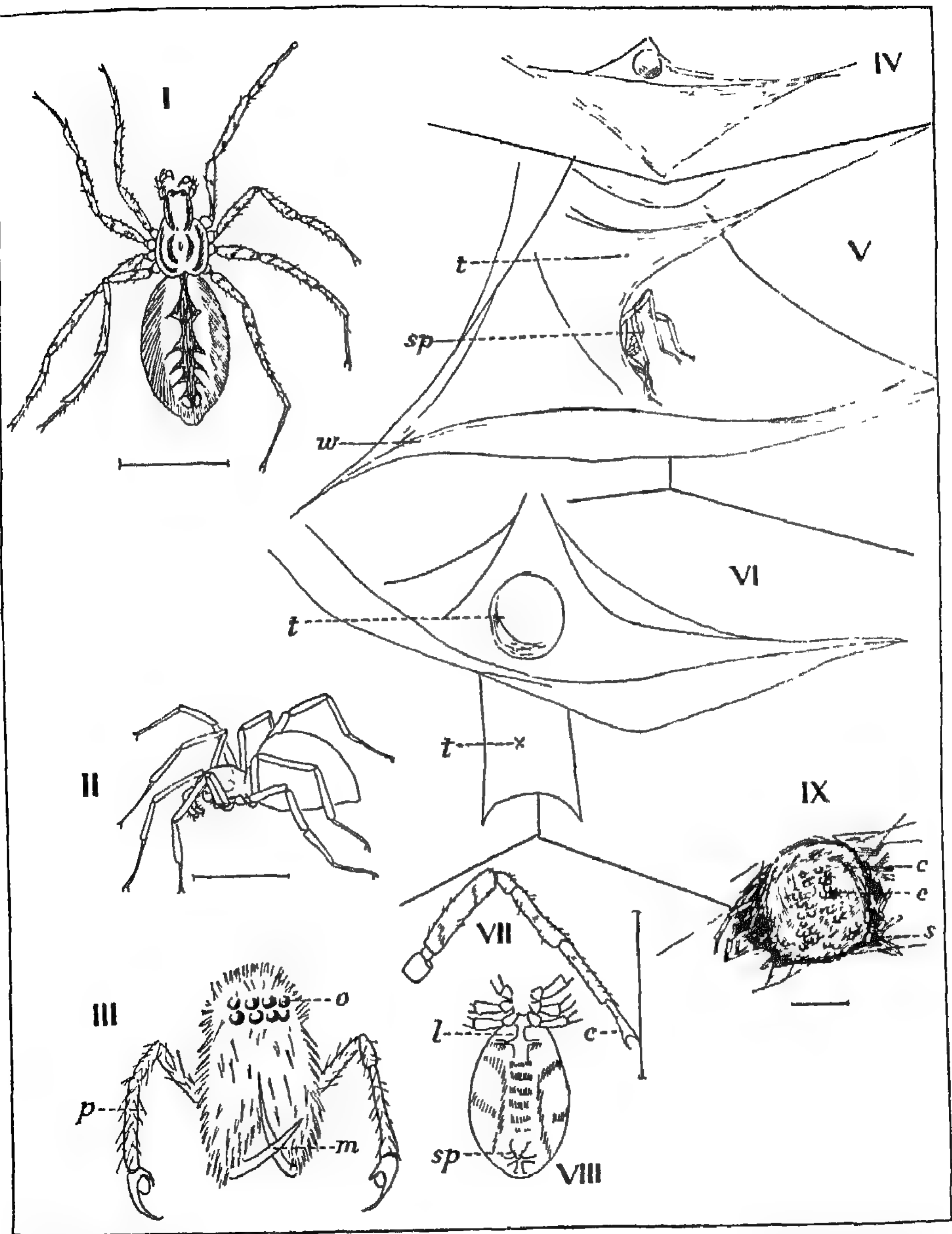
XII. HOUSE SPIDERS



Aim.—To recognise the differences in habits and appearance between House Spiders and Garden Spiders.

Material.—Some House Spiders enclosed in test tubes or small glass bottles plugged loosely with cotton wool.

PLATE X



HOUSE SPIDER (Tegenaria domestica) I Male II Female III Head of male *o*, eyes, *m*, jaws, *p*, pedipalps IV—VI Shelf-like web (*w*), *sp*, spider, *t*, tunnel VII Hind leg showing claw (*c*) VIII Abdomen showing position of spinnerets (*sp*), *l*, lung books
GARDEN SPIDER (Epeira diademata) IX Cocoon (*c*) showing eggs (*e*) and supports (*s*)

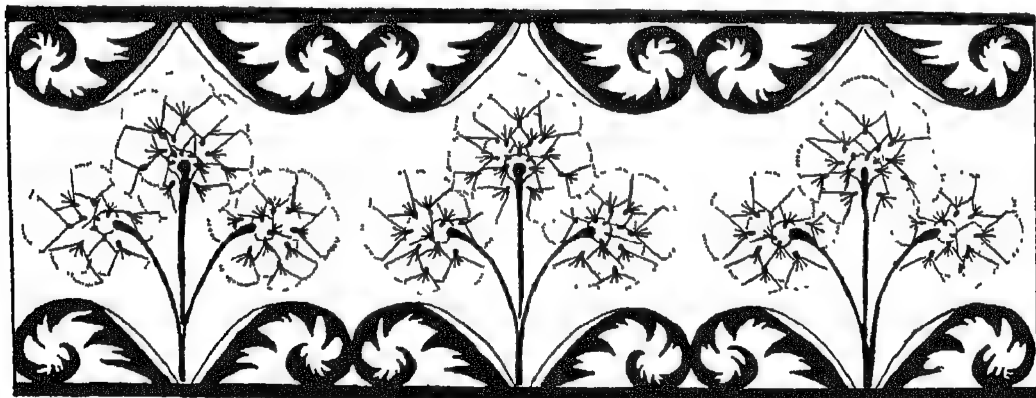
Introduction.—Having found some webs of House Spiders, give the children the opportunity of examining them. They can work in small groups as before, and compare the structure of the web with that of the Garden Spider.

I. The House Spider's web consists of one or more triangular shelves (which could be sketched). These are usually connected at the back by a short, wide tunnel of silk The threads are not laid in any definite pattern as they are in the Orb-Weavers, but cross one another repeatedly until a thick mat is made. None of these threads is sticky, but flies become entangled in their soft mass The spider itself, or possibly both male and female, usually lurks in the tunnel and springs out on any victim The webs are generally called cobwebs, and cobweb weavers may also be found out of doors, especially about disused sheds and chicken runs. Very often dry cast skins will be found, together with shrivelled remains of flies and bits of dead leaves, plaster and dirt.

II. Examine the spiders in the test tubes Full-grown specimens have a body nearly 1 in long, with a longer head-thorax and a narrower abdomen than the Cross Spider The male is like the female except for the clubbed feelers, and they are both ferocious looking. They have very long legs, arched high above the level of the body, and large, formidable jaws which can be seen without a lens. These end in short, piercing joints folded inwards across one another, resembling those of the Cross Spider but much larger.

III. Let the children make a labelled sketch of one of the spiders, showing head-thorax, abdomen, jointed legs and, separately, a view of the head with the large jaws The head is best seen with a magnifying lens.

XIII. ANNUAL WEEDS IN THE GARDEN



Aim.—A study of the life histories of such weeds as Shepherd's Purse, Germander Speedwell or Field Speedwell.

Method.—A class period might be given early in the summer term to exploring the garden in order to find and name all the weeds growing there. One or two of each might be dug up in order to see whether they had very firm, deep or wide-spreading roots, with runners or buds below the soil, which would indicate in most cases a peren-

nial habit, or whether they had a much lighter hold on the soil, suggesting that they were annuals Seedlings should then be looked for, and if possible identified One or two patches about a foot square could be enclosed for continued observation, as the rest of the weeds would have to be uprooted for the sake of the garden, unless a wild patch is kept The full life cycle could then be watched, special notice being taken of the means of seed dispersal

Shepherd's Purse is an example of a plant with very rapid growth, developing seed in a few weeks, and producing in its flat, purse-shaped fruits (called *siliculas*) very light seeds, lying on a thin plate called the *replum* (as in the Wallflower) between the two flat carpels. Its growth seems to be hastened in dry weather or in dry, poor soil, when a much smaller plant may be produced, fruiting even at a height of one to two inches above the ground It is liable to attack by a mould, which penetrates the stem and forms a white fluffy outgrowth at the surface Its little white, inconspicuous flowers form a flat head, and are visited by small insects for their honey.

Notice in each case the time and duration of flowering of the weeds, the shape and arrangement of the flowers, the order in which they open, whether fruits and flowers are open together, entering these points on a Flower Calendar Both Shepherd's Purse and Germander Speedwell produce a succession of flowers, since the youngest are at the top of the flowering shoots The beautiful deep blue discs of Germander Speedwell, making a brilliant patch in the grass, draw attention to the nectar secreted in each very shallow tube. Two widely separated stamens, projecting sideways, brush against the body of any visiting insect, which the central stigma touches at the same time. The corolla is easily detached at the slightest touch or by wind

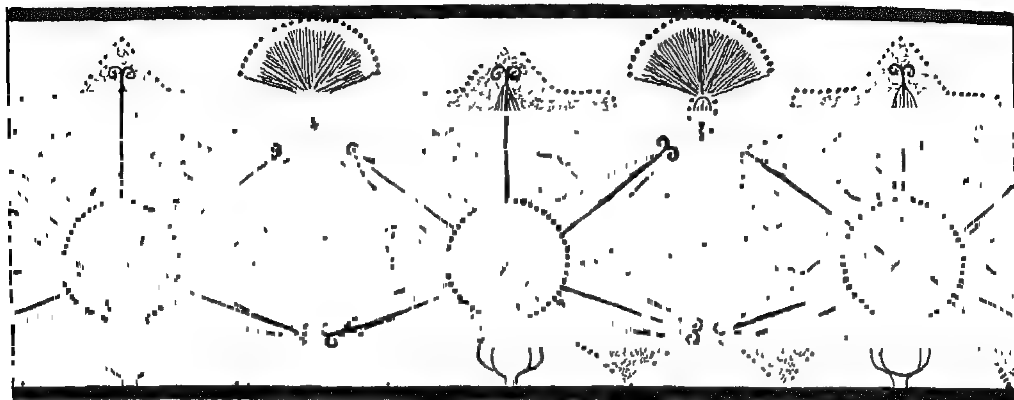
It is a good plan to gather some seeds of the common annual weeds and try to grow them in boxes of finely sifted soil. Make a shallow groove with a knitting needle (not more than ⅛ in deep), scatter the seeds on the previously moistened soil and cover very thinly with sifted soil Although these weeds grow so easily, to make sure of success it may be well to bake the top layer of soil (Reference has previously been made to Mr P. A. Dymes' articles on growing seeds of wild plants in the School Nature Study Union series)

The life histories of weeds can best be studied by making labelled drawings of the various stages It is possible also to grow the weeds under various conditions both of moisture and light, and also of soil. Sandy, clayey and loamy soils may be tried, and also the use of liquid animal manure or artificial fertiliser. Shepherd's Purse, Germander Speedwell, Groundsel, Orache (a weed with narrow oval, grey frosty-looking leaves), Mayweed (with a white daisy-like flower), all grow easily and very quickly.

Several of the Speedwells occur as weeds in gardens, and in learning to distinguish them the children will get a glimpse of what is meant by *species*, for though all are closely alike, belonging to the same *genus*, yet there are differences which can easily be detected if they are looked at carefully Germander Speedwell has racemes of flowers in the axils of the leaves, and a double fringe of hairs on the stem, the fringes on one internode being at right angles to the next. These are easily seen on holding the stem up to the light, and their delicacy is attractive to children The Common Speedwell, too, has a hairy stem, but the hairs are scattered all over. The Field Speedwell (often found in the vegetable garden) has a white lower petal



XIV. PERENNIAL WEEDS: THE COLTSFOOT



Aim—To see how the Coltsfoot gains a hold and survives from year to year.

Material.—Sufficient Coltsfoot plants gathered in autumn or winter and in early spring for several groups of children to study If possible, let the children see them dug up.

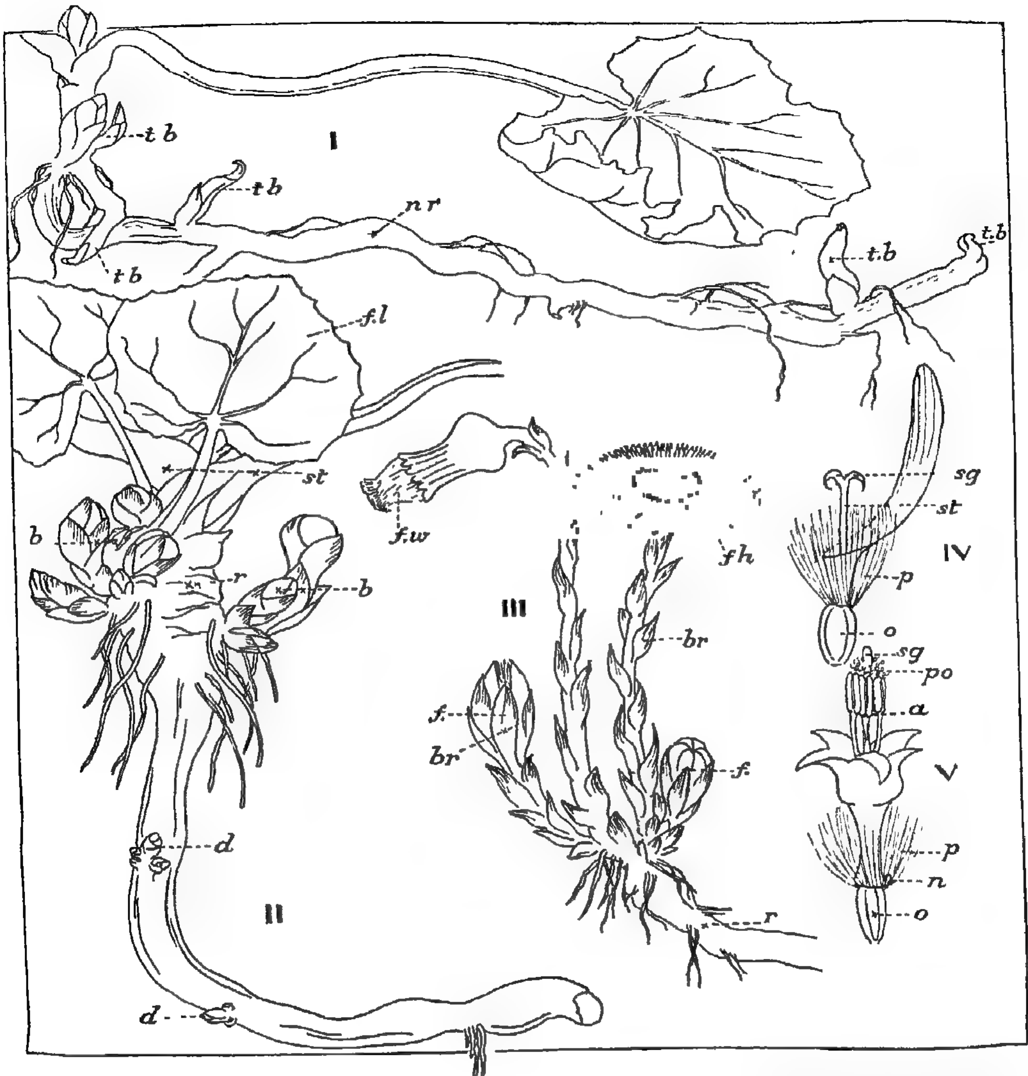
Introduction.—If the first lesson is taken in November or December, let the children see the plant and notice the dead leaves and the cluster of large strong-looking buds, ready for next year Ask if they know when the plant will flower. It is one of our earliest and hardiest spring flowers, blooming in February or earlier, and growing in waste places and on clay banks (e.g railway cuttings) where there is very little soil.

I. Let the children make an individual study of the plant, by means of careful drawings. Recall the features of Snakeroot, or Goutweed, or some other perennial weed already studied, and suggest that they shall compare the means by which the two plants establish themselves. The accompanying illustrations show the main points to be noticed. The plant is fixed by means of a strong, thick underground stem, which goes straight down from 2 to 4 or 5 in., then sends sideways a long, much thinner white rhizome or underground stem, on which (as in Snakeroot) small scale leaves can be seen The main stem is rooted by a bunch of fibrous roots, and the rhizome sends out short branched roots at various points At the end of the rhizome is a bud which turns up (as in Bindweed and Snakeroot) to produce a new plant in the next year In addition, there may be sent from it lateral branches, of which the terminal bud may form another new plant

II. The flower buds on the main plant may be watched until they open, if the plant is placed in a box or pot of soil and kept damp Notice the changes in colour and texture of the protecting scale leaves as they come above the soil. These buds are white in the winter.

The study may be continued so soon as the flowers open, by drawings showing the opening buds and fully expanded flower. A pot of Coltsfoot in flower, with its scaly

PLATE XI.

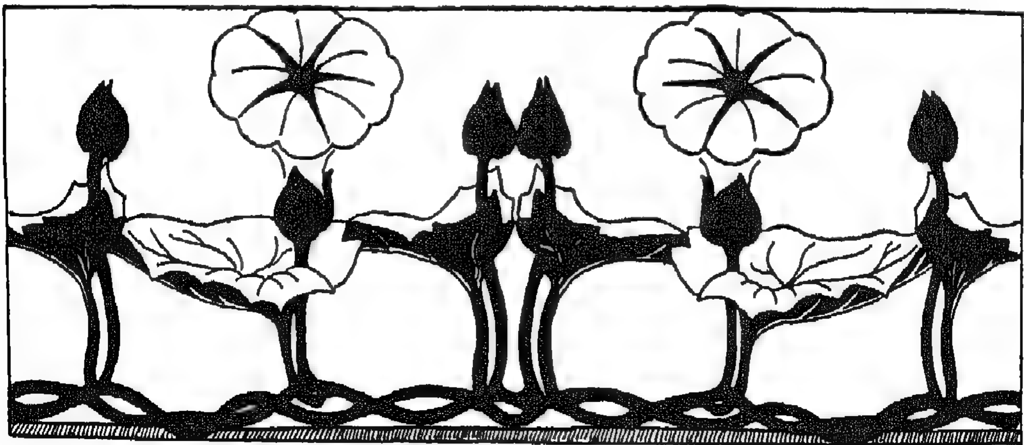


COLTSFOOT I Newly formed rhizome (*n r*), *t b*, terminal buds II Plant in autumn *st*, withered leaf stalks of foliage leaves, *f l*, foliage leaf, *r*, underground stem swollen with food, *b*, flower and leaf buds for next year's growth, *d*, buds on stem which will continue growth III Plant in spring *r*, underground stem, *f*, flower buds, *br*, bracts, *f w*, withered flower, *f h*, flower head IV Female ray floret *st*, style, *sg*, stigma, *p*, pappus of hairs, *o*, ovary V. Male disc floret *a*, stamens (joined), *sg*, stigma *po*, pollen, *n*, nectary, *p*, pappus of hairs, *o*, ovary

bracts and vivid golden heads, is most decorative both in colour and form. The children will be able to see that there are two kinds of flowers forming each inflorescence (a head or *capitulum*). The teacher might explain that these flowers serve two purposes, illustrating her explanation by enlarged blackboard sketches of the two kinds. The disc flowers (or florets) are little tubes, which provide pollen and nectar for the early bees and flies; the conspicuous ray florets actually form the seeds, and each is provided with a stigma to receive pollen. The ray florets open before the disc florets, and so usually receive pollen from other plants.

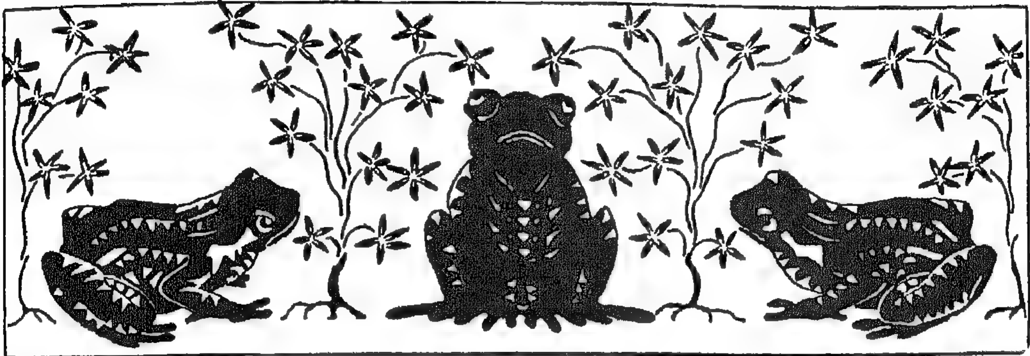
Watch the changes that take place as the flower fades and the fruits begin to form. Each fruit has a tiny circlet of white, silky hair to carry it away. It is said that a breeze travelling at the rate of only two miles an hour can carry them for long distances.

III. After the flowers the leaves begin to develop. Children like to roll away the delicate grey veil, like a cobweb, that covers the upper side of the young leaves. This gradually breaks as the leaf grows. The under side, too, has a feltlike covering of hairs, but this cannot be removed. Coltsfoot plants, living as they frequently do on clay soil where there is little humus, are subjected to extremes of wetness and dryness, for clay holds water for a long time in wet weather and becomes baked hard in dry weather. In Kerner and Oliver's *Natural History of Plants* it is pointed out that the hairy leaves will be useful in both cases, for, just as it is difficult to wet a fleecy blanket, so it is difficult to wet these leaves (this might be tried), and, on the other hand, in dry weather, the hairs would entangle and hold the water vapour escaping from the leaves and prevent it from passing out into the air, and so prevent the leaf from losing too much water.



BINDWEED

XV. THE STUDY OF A DITCH



A DITCH may occur between two fields, with or without a hedgerow and bank or banks, and it may serve either as a boundary or for drainage, or for both boundary and drainage If the ditch occurs by a roadside or a ploughed field, it is frequently flanked by a strip of sward Thus it may be possible to make a combined study of three such different areas closely associated But since the main features in the study of a hedge have already been outlined, the following suggestions are confined to the study of the ditch only.

If possible at least three visits should be made to the ditch in the course of the year one to see the spring growth starting, one in June or early July to see the vegetation at its height, and one in September to see the dying down of the summer growth and to notice any water plants which die down for the winter and drop buds or small green shoots to root in the following spring. It will be possible in connexion with these visits to continue the study of insects and other animals living in the water, but as these will present the same interests as those living in ponds (already dealt with), these notes are confined to aspects of plant life

On the first visit it would probably be noticed that parts of the bed of the ditch were much drier than others, and that the steep slopes support a different flora from either the wet or dry bed The plants growing in each of these situations would be noticed and named Sometimes the same kind of plants (e g Hairy Willowherb and Figwort) will be noticed in different parts showing a marked difference in luxuriance There will be found some plants which are common in other places (Dandelion, Nettle or Dock in the damp hollows), but growing much taller and even more vigorously than in open situations on banks or in fields Other plants will be found only in ditches or damp places, e g Brooklime, Water Crowfoot (the Lesser, with small, nearly round leaves, and the Greater, with two kinds of leaves, round floating leaves on the surface, and finely divided, almost threadlike leaves growing below the water.) If the ditch shows a tendency to dry up at certain times, these plants, and even the Water Starwort which

is typically a submerged plant, having only the rosette of leaves at the tip of the stems at the surface, will grow much stiffer and more erect, so that they stand up out of the mud in a compact mass It is interesting to compare in this way differences of growth and habit which show a marked dependence on some easily seen condition in their environment

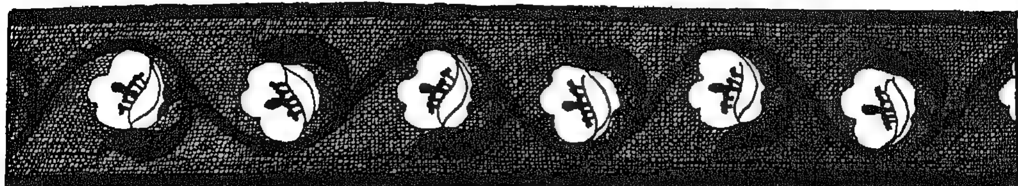
If a list is made of the plants found growing with their roots in the mud and perhaps their lower leaves submerged (marsh plants), and their general characteristics, and especially their leaves, are compared, it will be noticed that many of the plants are tall and not very wide spreading, and that the leaves are large, and usually not deeply divided This would raise questions about the purpose of leaves and the effect of water and light on growth, since the plants are usually shaded in their early growth by the steep sides of the ditch and, perhaps, a hedge. The same questions would arise in connexion with the plants found in a wood. This makes a good opportunity of introducing a short series of simple experimental lessons, which would partially answer these questions.



[*Photo* *Henry Irving*

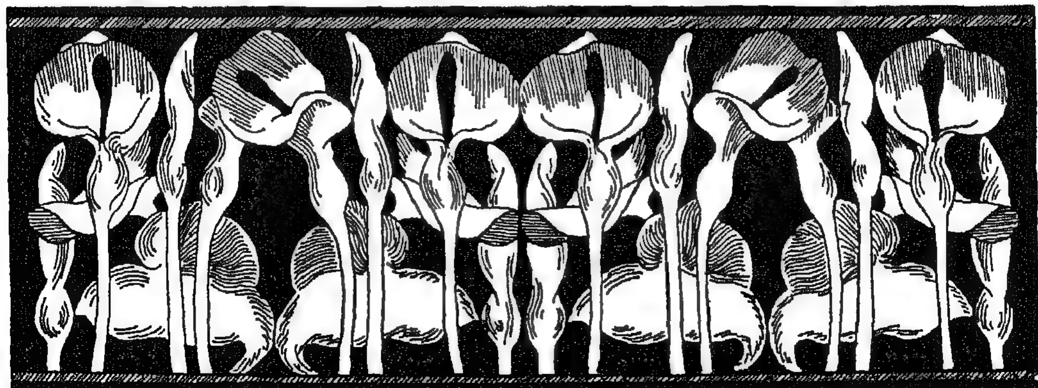
TYPICAL MARSH OR DITCH VEGETATION IN SUMMER OSIERS, REEDLIKE GRASSES, MINT AND WILLOWHERB

XVI. SPECIAL PLANTS OF THE DITCH



BESIDES making observations and inquiries about the general features of plant life in a ditch, there is ample opportunity for the study of individual plants in their various phases throughout the year, and especially for extending the children's knowledge of flowers and their means of pollination and seed dispersal The Willows growing close to the water perhaps suggest by their catkins that they are wind pollinated, yet they are really pollinated by bees and are provided with nectar to attract them. Later, they close their numerous bracts round the developing seeds, to open them again about June or July, when the tiny, silky plumes, which carry each seed away to a new home, have developed. The Willowherb, also, has seeds (not fruits) provided with silky plumes, most neatly encased until the moment of dispersal in four long rows inside the narrow capsule The Alder has dark bronze-crimson catkins and tiny crimson cones which, when the clouds of light pollen have been brought to their stigmas by the wind, grow first green, then ripen to a rich brown, and, having shed their seeds, remain on the tree for a year or two longer as brittle, black cones about ½ in. long (These cones, though in appearance so like those of Pine and Fir trees, are quite different in structure, and do not point to any relationship)

The Figwort, with small reddish-brown hooded flowers with a short lip, is pollinated chiefly by wasps, and has its four stamens and its stigma pressed against the lower side of the tube, so that when the insect enters they touch the under side of its body and either leave or receive pollen. It is said that while bees work upwards in



WILD ARUM

visiting a stem with many flowers, wasps work downwards, and that "wasp-flowers" frequently develop pollen in the upper flowers while the stigmas are ripe in the lower The flowers of Figwort might be examined to see if this is so. It will then be noticed that in each flower the stigmas ripen first and the stamens later

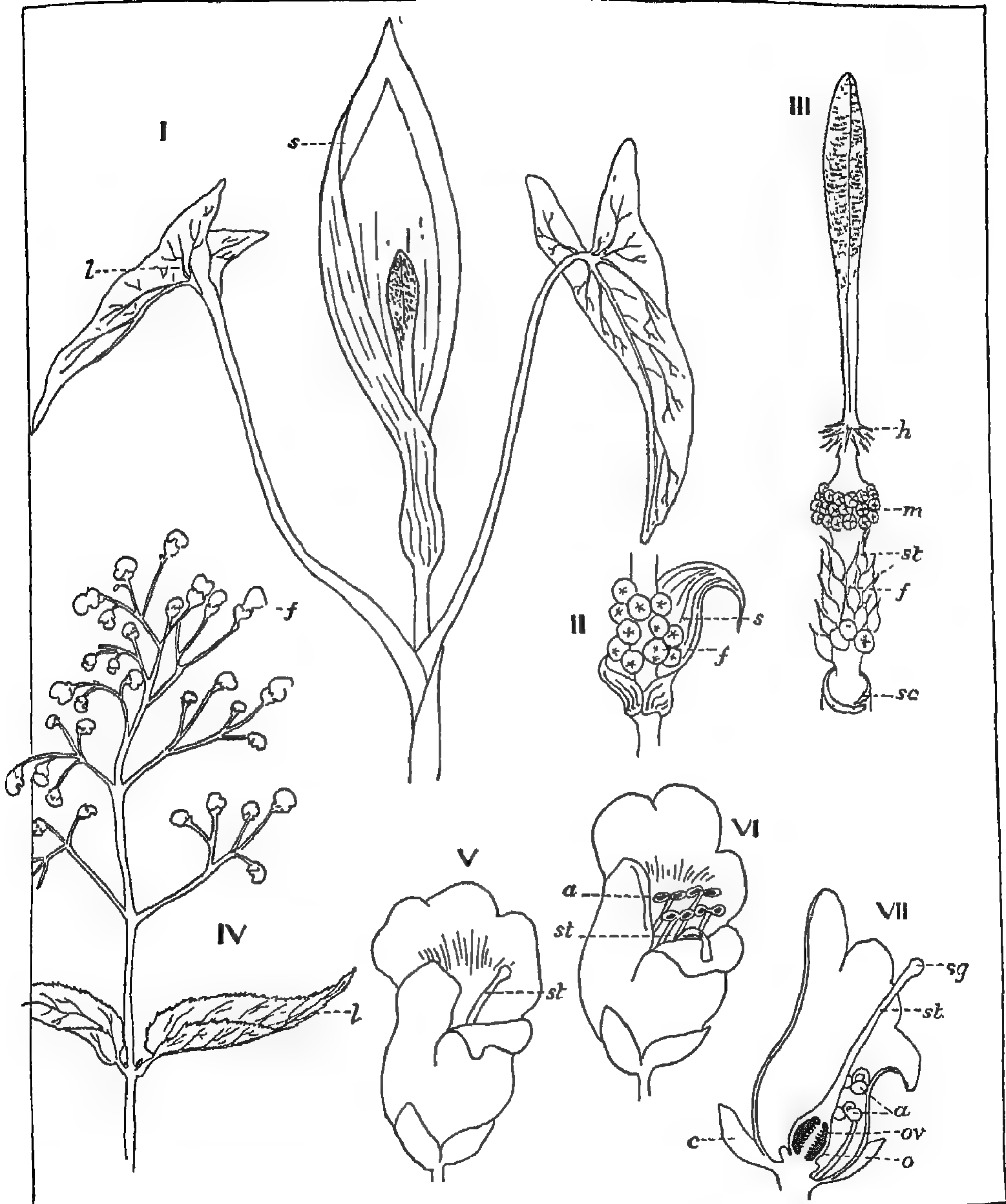
Since the lower flowers are the oldest, if the wasp, coming from another flower, begins at the top, it may deposit pollen on the stigmas of the young flowers, and then when it reaches the lower flowers, take away pollen to the stigmas of another plant. That this does happen is mentioned by Lord Avebury, quoting Mr Wilson, in *British Wild Flowers in Relation to Insects.* It is doubtful whether the dull colour would attract bees, which certainly prefer bright, showy colours, but wasps do not seem to mind.

It will be seen that there is a partially developed stamen which produces no pollen (called a *staminode*) lying against the upper surface of the flower tube, indicating that at one time there were five stamens If this flower is compared with the White Dead Nettle (previously examined) it will be seen that when the stamens and stigma occupy the upper side of the flower tube there is not room for the middle stamen, which has quite disappeared

XVII. THE STUDY OF A WOOD



IN observing the conditions of woodland, it is found that the character of the soil and underlying rock has a great influence on the vegetation, so that certain trees, shrubs and undergrowth are associated with particular soils. Although a detailed study of the relation of plants to soils is not feasible with young children, and would not appeal to them even if it were, no true idea of the conditions could be gained without some reference to the soil and rock from which the plants not only gain food, but the water supply which is essential to all shade-loving plants Where the soil is heavy clay, much more water can be held than in sandy soils, even when they are enriched by a plentiful supply of humus, a close soil will have less oxygen than a looser soil,



WILD ARUM I Flowering shoot, showing leaf (*l*) and spathe (*s*) II Collection of fruits (*f*), *s*, withered spathe III Male and female flowers *m*, male, *f*, female, *h*, stiff hairs, *st*, style, *sc*, scar left by spathe

FIGWORT IV Flowering shoot, showing leaf (*l*) and flowers (*f*) V Young flower *st*, style VI Old flower *a*, stamens (mature), *st*, withered style VII Vertical section of young flower *st* style, *sg*, stigma, *a*, stamens, *o*, ovary, *ov*, ovules, *c*, calyx

and some soils will be more acid than others. It would be possible to show the children on a geological map what kind of rock underlies the wood they are to visit, and if there is a quarry, pit or railway cutting where the rock is exposed, a visit should be made to see it. If possible samples of the rock should be shown. When the first visit to the wood chosen is made, a little of the soil should be taken back and examined, (as explained in Vol. III, page 438) to see how much water it will retain or allow to pass through, whether its particles are large or small, and whether it contains much humus. A simple test for the presence of lime or chalk might be made by shaking up a little soil with vinegar or lemon juice If bubbles appear (carbon dioxide) the result is positive The children should first be shown the action of the acid on blackboard chalk. If they are also shown that litmus (which, by the way, is obtained from a lichen) turns blue with an alkaline substance such as dissolved washing soda, and red with acid, a little of the soil may be shaken up in water and tested with litmus The children may be told that some plants thrive in acid soils and others cannot grow there. Decaying vegetation tends to make the soil acid, if it is very close so that air



[*Photo W B Crump*

LIGHT OAK WOOD IN AUTUMN; FOXGLOVES, BRAMBLE (IN LEFT LOWER CORNER), SOFT GRASS AND HAIRY BROME (ON RIGHT)

cannot get to it freely, and in a garden we counteract this acidity by digging, hoeing, and adding lime or chalk If the wood is partly a plantation, on healthy or loamy soil, it is possible that it may contain some trees and shrubs which cannot grow in the presence of lime in the soil, but are said to be *lime shy*, such as Sweet Chestnut and Rhododendron.

The main object of the study is to become familiar with the various plants and animals Notice in what situations the plants grow best, whether in the shade of trees or in the open Notice the size and arrangement of their leaves, which are often adjusted so that they fit into one another (a *mosaic*) Look for creeping stems which root at intervals and form new plants, e g. in the Wood Violet and Wood Anemone. Notice how many of the herbaceous plants which form the undergrowth flower very early, when there is a chance of their being seen by insects before they are overshadowed by the taller plants Observe how many of these plants (Bluebell, Wood Anemone, L. Celandine) have a special store of food in bulbs or tubers to draw upon for their rapid spring growth, or means of forming new plants in other ways if they fail to receive visits from insects and to form seeds. In the Violets, look for the tiny hidden flowers which develop later, never open, yet are able to produce seed It is said that most of the seeds are formed in these closed flowers.

Look for the seedlings of trees, and see how far they may be from their nearest grown-up relations See whether they survive the first year, and try to consider what may be the cause of their disappearance They may not be able to obtain enough food or light in the vicinity of their big neighbours Do rabbits live in the wood, for they may nibble away a great many young trees?

Look for butterflies and moths, and try to identify them from books on the reference shelf If you are very quiet, you may be lucky enough to be able to watch a red squirrel eating nuts on the ground, or running up a tree, but to see most of the birds and tiny woodland creatures it is necessary to come alone and sit very still for a long time

Notice that the leaves of many undergrowth plants are large and thin, and droop rapidly if they are picked The woodland flowers, too, droop quickly, but may sometimes be revived if plunged into plenty of water

An attempt may be made to watch the life of some of the plants in detail throughout the year, choosing them from different situations, and lists might be made of plants forming undergrowth, either shrubs or those carpeting the wood floor, following the lines already suggested in connection with hedge and ditch plants In the winter, the floor is often covered by mosses, which are most luxuriant when all other growth has died down The various kinds to be found might be collected and examined

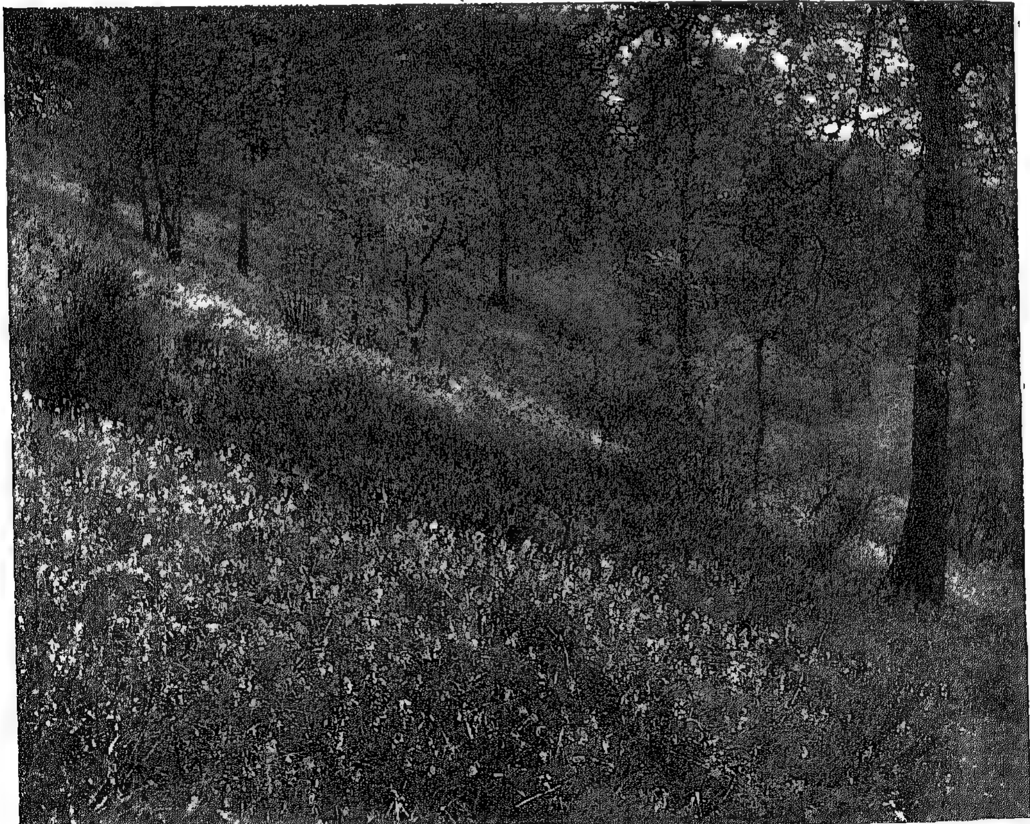
It will be noticed that in the three vertical zones occupied respectively by trees, shrubs, and herbaceous undergrowth, certain types predominate. These are spoken of as the *dominant* plants. In many cases, e g. Bluebells, Dog's Mercury and Bracken, large patches of a single kind of plant will spread and crowd out almost everything else It is convenient to refer to woods according to the principal associations of plants thus formed.

No formal survey could be attempted with children of primary school age, but the teacher will find that she needs some knowledge of the characteristics of various types of woodland and other plant associations as a background for her work A full description of the characteristics of British woodland is to be found in Dr E G Tansley's *Practical Plant Ecology*, and a list and brief description of the chief types in *The Study of Plants*, by Dr. T. W. Woodhead. Two short illustrative notes are given here

Oak woods on millstone grits and coarse sandstones —These are common in the uplands of Lancashire, Yorkshire and parts

of Cheshire and Derbyshire. Where coarse sandstone lies over fine shales, a dry wood will be formed if the slope is sufficient to allow free drainage, but in hollows and flat places resting on the shales, the weathering of the rock gives a deep, moist soil. The Sessile Oak (leaves with no stalk) is the principal tree. In the higher parts the undergrowth may consist of plants with small or rolled leaves (Ling, Bilberry, Bracken, White and Yellow Bedstraws, fine grasses) but in the damper parts Soft Grass takes the place of Hair Grass, and Bluebells will be plentiful, and the undergrowth will contain a larger number of types, but the variety of forms will be much less than in the more loamy soil of the type next described

Ash woods on calcareous soils, i e. chalk or limestone.—In some districts the chalk is overlaid by clay, when a water-holding loamy marl results, rich in food for plants. In the higher parts of Essex, for example, such woods exist over large areas, and here the predominating Ash trees are interspersed with Oaks The undergrowth is very varied, and the herbaceous plants may include amongst many others, great stretches of Dog's Mercury and Bluebells, Primroses (or Oxlips in some of the Essex woods), Violets, Wild Strawberry, Ragged Robin, Water Avens or Geum, Herb Paris, and various Orchids. Dogwood, Buckthorn, Spindle, Blackthorn and Wayfaring Tree are chalk-loving shrubs, which flourish

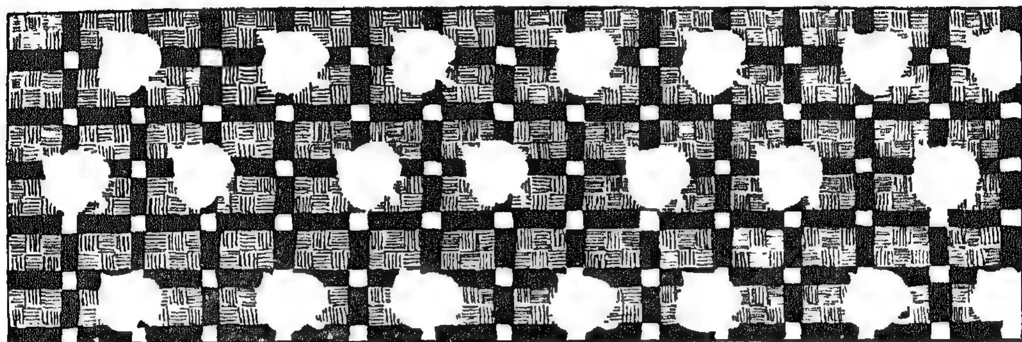


[*Photo* W. B Crump

OAK WOOD IN SPRING, WITH UNDERGROWTH OF SOFT GRASS AND BLUEBELLS

amongst many others such as Hazel and Wild Guelder Rose and Wild Rose, especially in parts which have been coppiced. None of this woodland is truly primitive, however, but the original wild plants are mingled with those trees that man has planted, and are influenced by his interference, for by cutting and in other ways he has encouraged some and discouraged others.

XVIII. THE WORK OF LEAVES



IN exploring woods and ditches and comparing the characteristics of their plants, it will have been noticed that a great many of the leaves are large, very delicate and soft in texture. If they have been brought back to the classroom, even on the way home they have wilted and drooped; but in some cases, if they have been placed deeply in water and especially if they have been floated in a bowl of water, they have revived. Yet many leaves taken from the garden can be exposed for some time without showing any ill effects Leafy branches of most trees droop quickly if gathered, though not to such a marked extent as many of the woodland and ditch plants This suggests an inquiry into the reasons for the difference.

Aim.—To find out which leaves wither most quickly and try to explain why.

Introduction.—Recall the facts just stated, and suggest the aim. Ask the children how we could find out which leaves wither first.

I. Let the children collect a large variety of leaves, some of them from ditches, some from gardens, and some leafy twigs. Add to these, if they are not included, a twig of Holly, some Willow leaves or Silverweed, Coltsfoot leaves, and leaves from a rock garden Put the stalks of one leaf of each kind into water (allowing plenty of water) and expose one of each on the table or hang them up on a string, without any water supply Note in both cases how long it is before they begin to wilt, and the order in which this occurs Some of those which are left without water will begin to show the effect in less than an hour, others in the course of the day

II. The children should write down at the time what has been done, with lists in two columns of the leaves used They can then record the results by writing beside each the day and time at which they noticed it withering The lists would then be compared in a subsequent lesson and a *conclusion* would be drawn (or a *deduction* made) from

the results obtained The conclusion would probably be that the large leaves wilt before the small ones, and those that are covered with hairs, either on one or both sides, (Silverweed, Willow, Coltsfoot), and those which have a hard leaf, are least affected and last longest. It seems, therefore, as if the protected surface has something to do with the result noticed What can it be that causes the leaves to wilt? Why should they wither because they are not given any water?

III. This may raise the question, "Will they revive if given more water?" Place some of the leaves in water to see. Now if the leaves wilt without water, and revive when more is given to them, what can have happened to cause them to wilt? Though there seems to be an obvious cause and effect here, few children see that the leaves themselves must have given out water, although the children will say that the leaves "dry up" Tell them, therefore, to watch what happens when some leaves, in water, are enclosed in a glass jam jar.

Place a leafy twig in a small jar of water, pushing it through a hole in a cardboard disc large enough to support a jam jar turned upside down over the twig Mark the level of water in the small vessel As a control, set up exactly the same apparatus without a twig. The cardboard will not only support the jar but will prevent evaporation from the surface of the water. Leave this for several days in a fairly warm place. When it is examined again, it will be found that the jam jar covering the twig is covered inside with drops of water, while the other one is dry just as when it was set up. What can have caused this? Where has the water come from?

The children will probably suggest that the water in the jar has come from the water in the lower one or from the air. Show them from the condition of the control jar that this is not possible What other possibility is there? It must have come from the leaves

Connect this conclusion with the observations previously made The leaves left on the table or hung up were giving out water and could get no more to replace it and so drooped Some of those in water could not get enough to balance what was lost. If the jar is dried, and the leaves are again set up in the same way, first in the dark and then in a cool place, it will be found that much less water is given off.

IV. Tell the children that it is part of the work a leaf does for the plant to give out water, and that you will all in the next lesson try to find out why it is necessary It also does other work for the plant which they could not yet understand

Let each experiment be written out at the time it is set up under the headings—

To find out . .

(*a*) What we did

(*b*) Result (Or what we found happened)

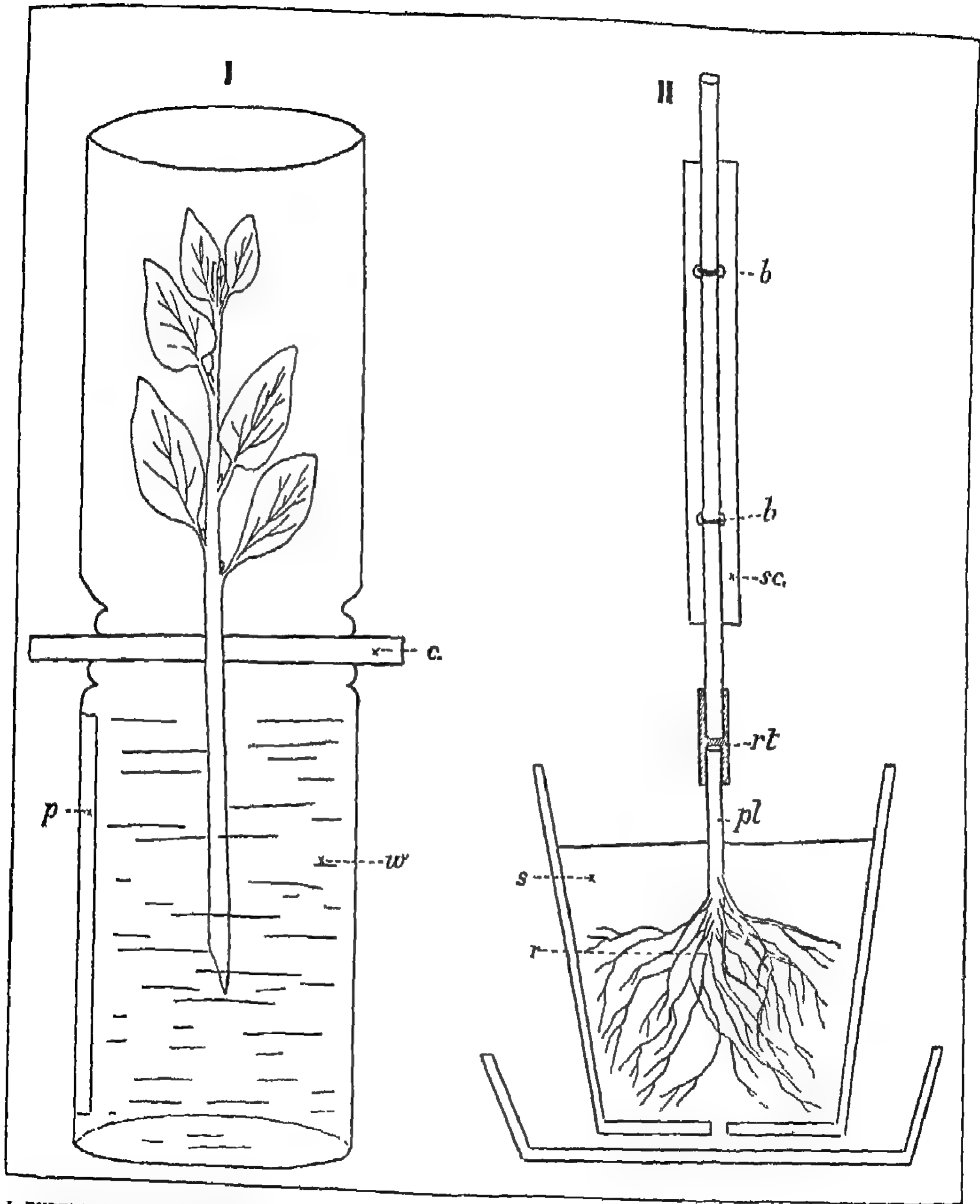
(*c*) Conclusion (Or what it has shown us)

These experiments would occupy part of several periods It is good to let the children draw the apparatus set up and explain it by labelling.

V. Look again at all the leaves which were placed in water, and notice what kind of protection they have against "drying up", or giving out too much water Dip the hairy or silky leaves of Coltsfoot, Silverweed, and Willow into a glass of water. It will be seen that the hairs glisten with tiny globules. This is due to their holding a film of air in the spaces between them. The air holds some of the water vapour which comes from the leaves, until it can hold no more, and so forms a kind of damp screen between the leaf and the outside air, preventing any more water from passing out.

We cannot see the water coming out of a leaf, because it is in the form of vapour, but sometimes on summer days we can see drops of water on Nasturtium leaves, exuding from the ends of the veins These have been forced out because the leaves have been taking up water so vigorously that they have more than they can hold

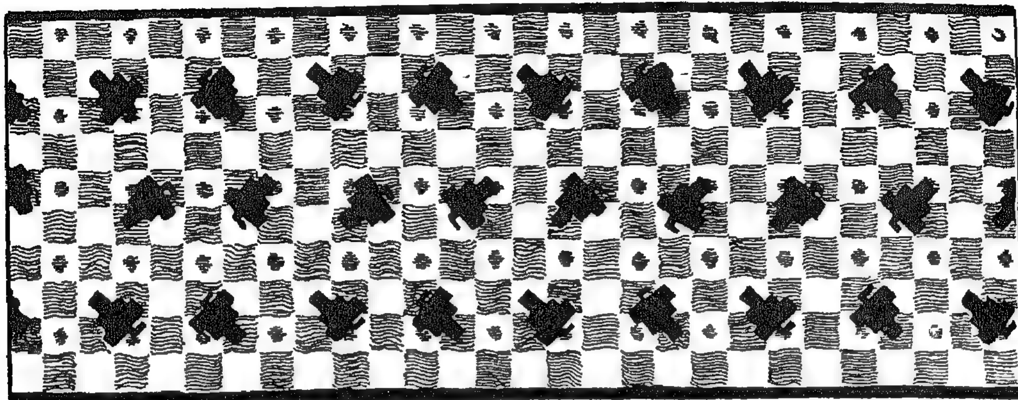
PLATE XIII



I EXPERIMENT TO SHOW THAT PLANTS GIVE OUT WATER TO THE AIR *p*, paper scale, *c*, cardboard disc to prevent evaporation from lower jar and deposition of water in upper jar, *w*, water

II EXPERIMENT TO SHOW ROOT PRESSURE *r*, root, *pl*, stem of plant cut 1 in above soil, *s*, soil kept well watered, *r t*, rubber tubing, *sc*, cardboard scale to mark level of water, *b*, rubber band passed through holes in cardboard scale to keep it in place

XIX. THE WATER CURRENT



Aim.—To see that water rises to the leaves of a plant through the roots and stem, and to understand that in doing so it brings necessary food, and so must be able to flow continuously through the plant if the food supply is to be kept up.

Introduction.—Remind the children that in the previous lesson we found that water passed out from leaves into the air. Produce the jar of leaves again and draw attention to the change of water level, which was marked on a paper scale. Water has evidently been drawn up the stem into the leaves, and has then escaped into the air.

I. In the first year of their course the children saw that roots drew up water, but it would be well to refresh their memories by placing in water, a small, vigorously growing plant such as a Geranium or Wall-flower, as in the previous experiment, and noting subsequently the change of level The water may also be coloured if desired

At the same time, take a similar plant of the same size growing in a plant pot, and cut off the stem about 1 in. above the soil Take a length of glass tubing of approximately the same thickness as the stem and attach it to the stem by means of a piece of rubber tubing, fitting it as closely as possible and wiring the tubing securely into place. Fix the tube upright by tying it to a stick pushed into the soil close to the plant. Water the plant well and leave in a warm, sunny window. This experiment may equally well be carried out with a plant growing in the garden instead of in a pot; so also may the experiment described in the previous lesson, by inverting a jar over a growing plant such as a lettuce.

If a laboratory balance is available, a further experiment may be set up to find out the amount of water lost by leaves in a given time Take several kinds of leaves, including hairy leaves (Coltsfoot, Willow, Silver Weed), evergreen leaves, and small or rolled leaves (Ling, Heath) Tie each kind into a bunch, and put a little melted paraffin wax over the cut ends of the stalks to seal them up and so prevent loss of water through the exposed veins Weigh equal quantities of the different kinds and leave them to dry for a given length of time, then weigh again. The value of the special surface should then be evident. At the same time,

it may be shown how difficult it is to wet such leaves; hence the protection may be useful in two ways, for if leaves were constantly soaked in water they would begin to rot.

II. Several days after starting the first two experiments, notice the results The children will see that the level of water in the jar has gone down, and that the coloured liquid has reached the veins of the leaves If coloured water has been used, the stem of the plant may be cut lengthwise, when it will be seen that it has followed a tract near the centre, leaving both the outside and the centre unused. This tract marks the position of the wood of the plant, which is used for raising water. It consists of a number of very fine, long tubes which can draw water up

In warm, sunny weather the amount of water drawn up will be enough to show a definite change in level, but to ensure that this will be sufficiently marked it is as well to use a flask with a long, narrow neck.

In the second experiment, if all has gone well, the glass tube should now contain several inches of water This water has been forced up the tube by the root The process is called *root pressure* The children would not, at this stage, understand how it happens, but they may note the fact

III. Explain to the children that the process of root pressure, together with the work of the leaves in giving out water, is very important to the plant, because the water drawn up from the soil has dissolved in it certain mineral substances, which the plant needs as food If the leaves did not allow the water to escape, the plant would be as full as it could be, and so no more water, with a new supply of food, could enter, and if the plant could not get more food it could not go on growing.

If the teacher wishes, she could grow two plants, one in pure water, and one in water in which a little of all the substances usually found in soil has been dissolved, and this the plant can use as food. She should explain to the children what has been done, but without telling them what these substances are, unless they ask The difference in size and vigour observed after a few weeks would illustrate the necessity for the plant to be able to obtain such food supply. The following solution in distilled water would be made up by a chemist. (It is given by Woodhead, *The Study of Plants*)

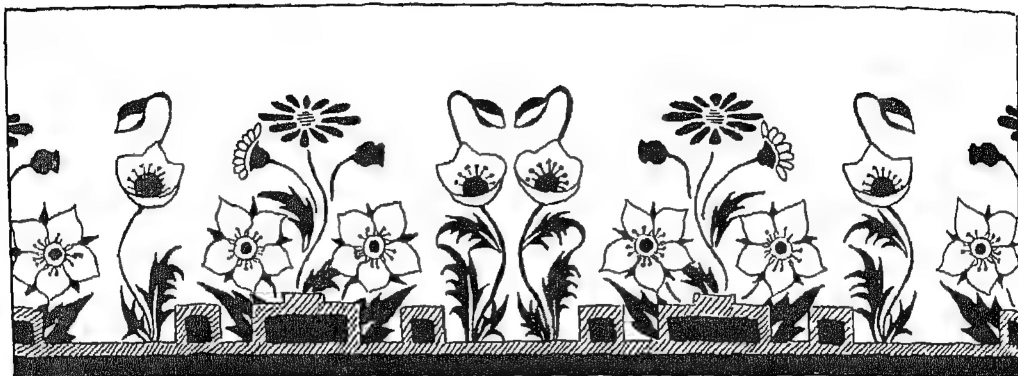
Distilled water, 1000 cc
Potassium nitrate, 1 gramme. (Saltpetre)
Sodium chloride, 5 gramme (Common salt)
Calcium sulphate, ·5 gramme
Magnesium sulphate, ·5 gramme
Calcium phosphate, 5 gramme
Ferric chloride, a trace.

It will be noticed that several of these substances are commonly used as artificial fertilisers. Without a trace of iron, plants cannot produce their green colouring matter.

A number of seeds, for instance of Broad Beans, Peas and Maize, might be soaked in water to hasten germination, and then planted in small plant pots in sand which has previously been thoroughly damped, and then half of the plants might be watered with ordinary tap water and the rest with the special culture solution, and the resulting growth compared by measuring the heights from day to day and marking them on squared paper to form a curve of growth. At first very little, if any, difference will be seen, as the young plants depend for some time on the food supply in the cotyledons, then those grown in culture solution go ahead. The conditions of growth (e g amount of light and heat) should be alike in other respects

The leaves of plants perform other important work, both in connexion with breathing and in manufacturing food, but it is not possible either to explain or to demonstrate these processes to young children They may, however, be told that, like a living animal, the whole plant breathes, and therefore that not only the leaves and stems, but even the roots, must have air.

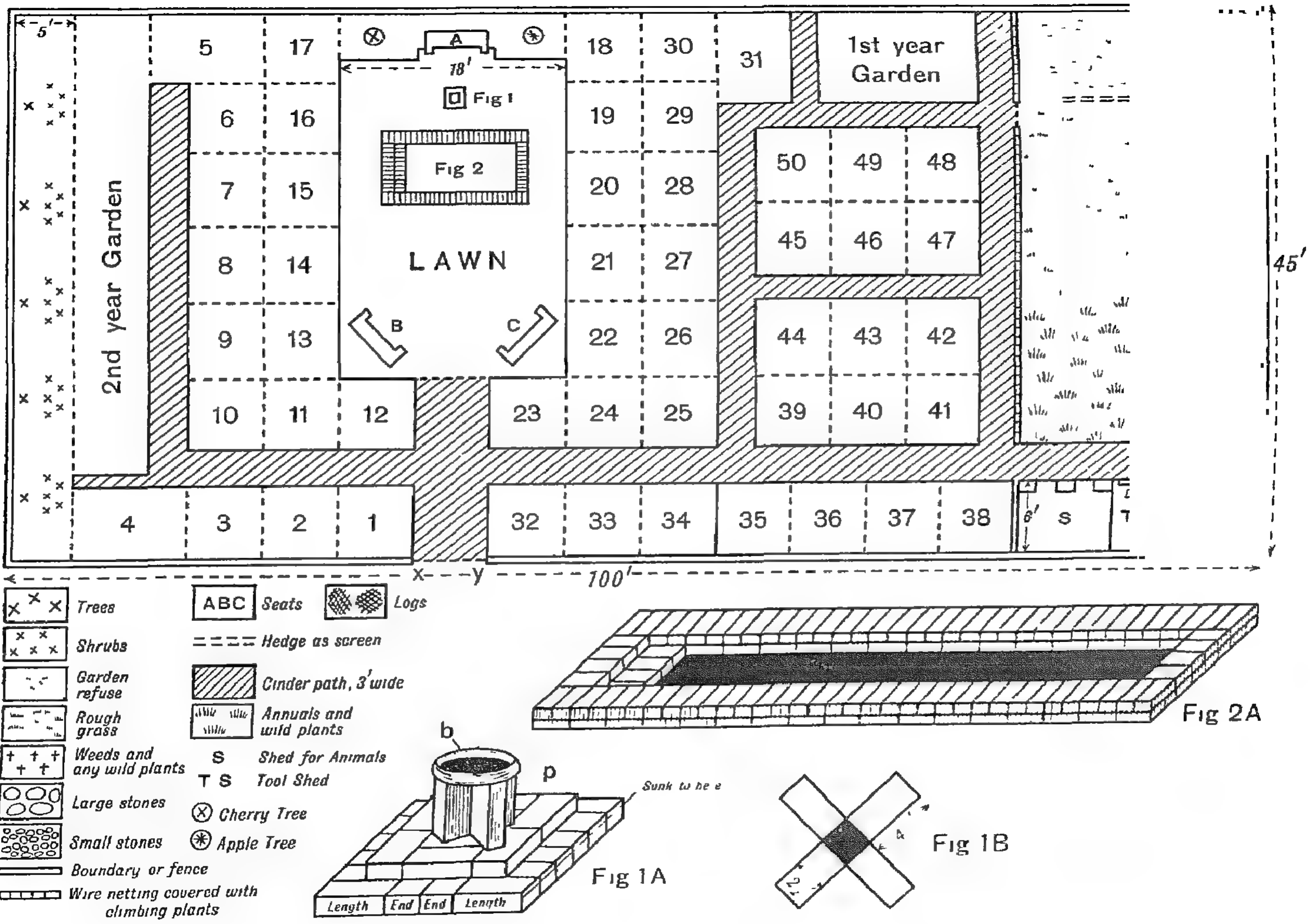
XX. THE SCHOOL GARDEN



IN planning a school garden for children of primary school age, the object is not to give them definite lessons on the principles of gardening, such as manuring and cropping, deep cultivation and highly skilled methods of propagation, which may be studied in the secondary school, but to give them some idea of the seasonal activities in a garden, by letting them watch and tend a few hardy plants through their various stages, and in so doing gain an acquaintance with their fundamental needs and ways, and with the animals which depend upon the plants or the soil for existence. If we can give our children the love of gardens, we shall give them a means of delight and satisfaction to fill their lives and to occupy their leisure, an antidote to restlessness and discontent, a substitute for the cheap pleasures which are destroying happiness in so many places. But to achieve this end we must let the school garden really belong to the children They must have free access to the garden, where they may play and watch as well as work, and even rest, without fear of damage and destruction They should, as far as it is feasible (and this may be very far) have a hand in its planning and development, and be consulted about the acquisition of new treasures and the placing of new plants And if it is to be loved, and to give joy, the garden must be a "pleasaunce," full of interest and variety and pleasant things, with seats in quiet corners where one can enjoy them Let there be trees and a lawn, whatever else it may lack Let the birds come, too, and bees and butterflies, and provide lavishly for them all, even for the Cabbage Butterfly, who is so ill-received in ordinary gardens

In filling the garden, the needs of the nature study course should receive due consideration There would be a place for climbing plants such as Nasturtiums, Sweet Peas and Rambler Roses, annuals and biennials whose life could be watched from seed to seed (Candytuft, Poppies, Wall-flowers, Snapdragons), plants with storage organs and runners, and bee flowers and flowers with different types of fruits.

Wild plants and even weeds should grow there, and we should have to balance the interest of plants and animals in this kind of garden Perhaps the best arrangement to make for snails and other "pests" is to shut off a part of the garden with wire netting and keep it wild, letting Dead Nettles, Goutweed and Dandelions have their way, but checking their seedlings or runners if they become too numerous, or as soon as



PLAN OF A SCHOOL GARDEN

they appear in other parts of the garden A few large stones and one or two old logs arranged at intervals give shelter by day and in the winter to the "pests", and if the rest of the garden is kept clear and free from superfluous growth that offers cover for snails and slugs, their numbers can be to some extent controlled A cinder path separating this wild part from the rest of the garden would probably help to keep them from wandering, as the delicate skin of the foot is unsuitable for rough, dry surfaces. The sprinkling of soot helps to keep them in their own domain

In the wild part, too, might be the tool shed and an open shed in which rabbits or other pets in hutches might be accommodated, together with their tins of food, straw and the means of keeping them clean. At the opposite end of the enclosure the supplies of leaf mould and garden refuse might be kept. These ensure a supply of earthworms' cocoons and other small creatures, besides numerous tiny earthworms which are needed for food by fish, frogs and newts and other aquarium dwellers "Gentles," or blowfly larvae, are appreciated as food and can be readily reared by hanging a small piece of meat in a flower pot in an out-of-the-way corner The eggs are laid and hatched in a few days, but as they pupate in about a week from hatching, fresh relays are constantly needed They can be "scoured," as Izaak Walton describes, and all fishermen know, by putting them into a tin of clean moss, as fish apparently object to the smell of unscoured gentles. Another food supply which can be cultivated in a corner of the "rough" garden is obtained by making a mash of any scraps of food, such as potatoes and sour milk, and burying it in a thick layer at the bottom of a wooden box which is filled up with garden soil In the soil are white threadworms, which feed on the mash provided and multiply very rapidly, so that a supply can be dug up whenever they are required for the aquarium.

The greater part of this corner of the garden might consist of rough grass, which will probably attract Tiger Moths and Drinker Moths and others to lay their eggs

Clumps of hardy perennials in the orderly part of the wild garden would not only be a necessary structural feature, but might give shelter between them for small cages, which would be the summer homes of lizards, frogs, grass snakes or other small creatures. These can also be placed with advantage on a grassy border, and if the bottom of the cage is made of fine wire netting the grass will grow inside it and give cool and natural shelter. It can be kept short enough to allow observation

A seed bed and a cold frame would give children opportunities of stocking the garden and handling young plants and cuttings It is a good plan to take numerous cuttings from shrubs and herbaceous perennials and biennials, so that children can realise how freely and easily propagation takes place in many cases. They would learn to divide perennials and edging plants, to stake plants carefully and to examine them for green fly and other pests, only in some cases these pests would themselves become objects of interest and study. Hoeing and hand weeding would be part of the regular care of the plants, while such processes as mulching and using liquid manure would be learnt in attending to some of the moisture-loving or coarse-feeding perennials The greater part of the digging would, however, be physically too great a strain for children

If possible the first and second year children should have certain beds set aside for them, while the third and fourth year children should have small plots, shared between two, *girls* as well as boys! If the garden is to present a pleasant and harmonious unity, and not just a miniature series of allotment gardens, careful planning is needed, and here again a compromise will probably result Perhaps the best plan is to arrange the garden plots round some central feature, such as a bird table and bath, or a water garden which is also an out-door aquarium, with a broad path

(perhaps of grass) leading to it, and to keep to some simple scheme of edging for all the plots. If tall herbaceous plants are kept to the back and only a wooden name label separates one plot from another, it is possible for the children to have some scope in the choice and arrangement of plants in their own plots, and yet to achieve a satisfying whole

The planting of trees needs very careful consideration if they are not in course of time to overshadow the whole garden Yet who would have a garden without them? Unless the garden is very large, a few of the smaller trees such as Mountain Ash, Birch, Laburnum, and one or two Apple and Plum trees, would probably be the most satisfactory There might, however, be seedling forest trees, for the interest of their early stages; they could be replaced by successive new ones before they grew large enough to interfere with other plants

The accompanying plan may suggest some possibilities It is well not to attempt too many "features" but to keep to a simple scheme No description of methods of making pools and rock gardens is given, as there are many excellent instructions published regularly in the various gardening periodicals for amateurs With regard to bird baths and bird trays it is desirable to avoid imitations in stucco and cement, and to use earthenware bowls, simple brickwork or roughly hewn stone troughs and pedestals, of which there are many on the market at reasonable prices The large earthenware seed pans and dogs' drinking troughs are often charming and suitable It is assumed here that the lower end of a rectangular playground has been converted into a school garden, but if some irregular patch of ground, already under cultivation, is available, it will probably lend itself to a much more attractive treatment

[This course of lessons in Nature Study has been written by Kate Harvey and illustrated by Vera Wainwright]

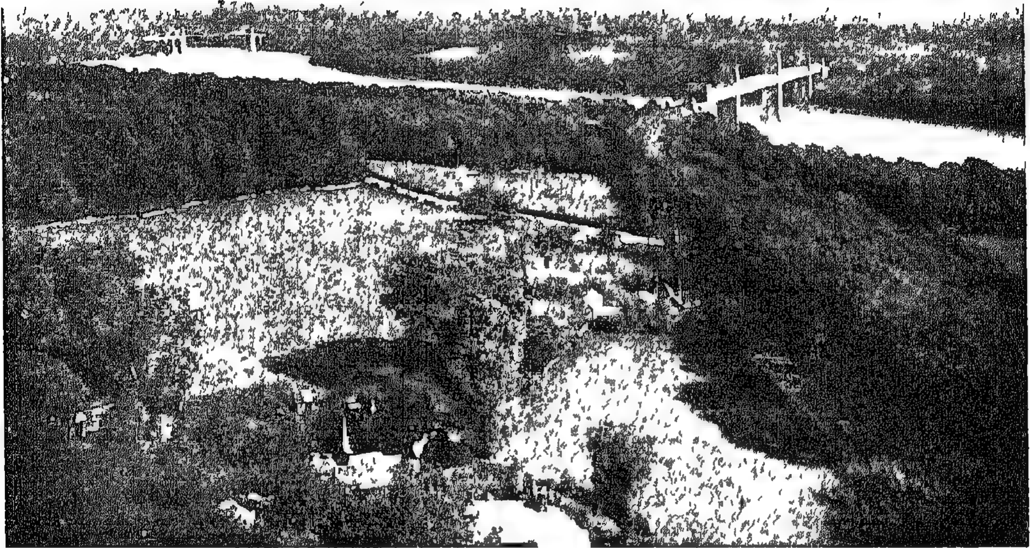


FOURTH YEAR'S COURSE

OF

DESCRIPTIVE GEOGRAPHY

DESCRIPTIVE GEOGRAPHY OF THE BRITISH ISLES



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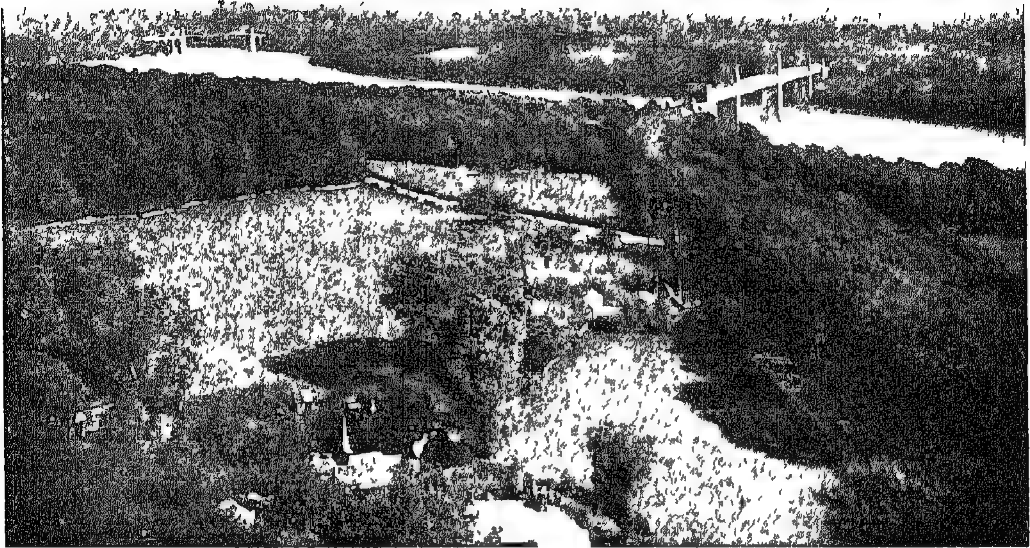
MENAI STRAITS

INTRODUCTION

IT has not been thought necessary in this course of lessons on the descriptive geography of the British Isles to arrange the lessons as has been done in the courses for the previous years. The geography of the British Isles is naturally more familiar to teachers than that of other parts of the Empire, hence the "Introduction" and "Teaching Hints" are embodied at the end of each chapter in the form of "Notes" By this plan, too, it has been possible to give the accounts at greater length, a plan which will be appreciated by the teacher

The work is planned on an industrial basis so that the geography of the British Isles is dealt with as a unit and not separately for each of the countries, England, Scotland and Ireland This plan of study will be found very satisfactory for giving the children a sound basis for the continuation of their geography lessons in the secondary school

DESCRIPTIVE GEOGRAPHY OF THE BRITISH ISLES



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MENAI STRAITS

INTRODUCTION

IT has not been thought necessary in this course of lessons on the descriptive geography of the British Isles to arrange the lessons as has been done in the courses for the previous years. The geography of the British Isles is naturally more familiar to teachers than that of other parts of the Empire, hence the "Introduction" and "Teaching Hints" are embodied at the end of each chapter in the form of "Notes" By this plan, too, it has been possible to give the accounts at greater length, a plan which will be appreciated by the teacher

The work is planned on an industrial basis so that the geography of the British Isles is dealt with as a unit and not separately for each of the countries, England, Scotland and Ireland This plan of study will be found very satisfactory for giving the children a sound basis for the continuation of their geography lessons in the secondary school

I. POSITION AND BUILD

Position.—The British Isles lie to the north-west of Europe, so near the continent of Europe that the Straits of Dover, the narrowest part of the sea which separates Europe and Britain, are only twenty-one miles wide The islands are washed by the Atlantic ocean, but the water around them is not so deep as that in mid-ocean, because the islands stand up from a tableland under the sea called a "continental shelf" The shallowness of the sea surrounding the British Isles causes high tides around the coast These high tides keep the river mouths free from mud, and allow great steamers to sail a long way inland

Nearly five thousand islands make up the British Isles, but most of them are very tiny. The two largest are Great Britain and Ireland. From very early days the sea has had a great influence on the lives of the British people It is a protection from other countries, it is a link with every country which owns a coastline; and, in addition, the central position of Britain amongst the continents has made it the market place of the world.

Build.—Most of the high land in Great Britain is found in the west and north-west. The big mountain masses adjoin each other, stretching southwards from the Scottish Highlands and Uplands to the Pennine Chain, or "backbone of England," and the mountains of Wales. The highest peak is Ben Nevis in Scotland, which is over 4,000 feet in height, a little more than one-seventh of the height of the world's highest mountain. Other famous peaks are Snowdon in Wales and Scafell in England. There is some high land in south-western England, and hills in the centre and south-east, but much of central and the whole of eastern England forms the English plain. In Ireland, masses of high land spread around the coast, and in the centre lies the Irish plain

The rocks.—It is interesting to know a little about the different kinds of rocks in the British Isles, because the work of the people depends to a great extent upon the soil found in the districts in which the people live The earth in which crops grow is not many inches deep, and beneath it lies some kind of rock The high mountain masses of the British Isles are made of very hard old rocks, e g *granite*, gneiss. Granite is sometimes quarried or cut out for building purposes The granite rocks of the English lake district are some of the oldest mountains in the world They may once have been as high as the mighty peaks of India, which are not half their age They have been worn away by the weather, scratched and torn down by sheets of ice during the Great Ice Age, yet they still stand up boldly above the country around them, and hundreds of tourists go every year to admire their grandeur and the beauty of the lakes hidden in their hollows. Other layers of hard rock are mined for coal and iron Such rocks as these are of no use for growing crops

In southern England, running westwards from Dover and Eastbourne, are ranges of hills called the Downs These are made of a rock called *chalk* which is softer and more easily worn away than granite. It is formed of the shells of tiny sea-creatures Rain soaks into it very easily, hence the soil upon the top of the Downs is dry and poor, and supports only short grass with clumps of prickly bushes here and there. No crops can be grown, but hundreds of sheep feed on the grass. Wherever the chalk rocks have run down to the sea, they have been worn away by the waves into tall white cliffs The "white walls of Albion" stretching along the coast for some miles westwards of Dover guard the most important gateway into England.

Many parts of the Pennines are made of *limestone*, a hard, greyish rock which is

used for building houses and for mending roads Sometimes it is burned in kilns to make lime, or crushed into powder for cement

Another kind of rock is called *sandstone*, and this is often covered with fertile soil On the sandy districts in Kent were once great forests, and nowadays orchards, hops and root crops are grown there

A great part of the English plain is made of *clay*. This is a soft rock through which water cannot soak, so clay districts are often very wet They form splendid pasture lands for cattle, and many people living on them are engaged in dairy farming Where the rainfall is light on the clay plain, wheat can be grown Clay is also useful for brick making.

Rivers.—The British Isles are well supplied with rivers, and as rain falls evenly throughout the year the level of the rivers generally does not alter a great deal The longest rivers are the Shannon, Severn and Thames, each of which is a little more than 200 miles in length The Pennine Chain is a water parting which separates the rivers flowing to the west of England from those flowing to the east. The mouths of some of the rivers open up the country to the sea for miles inland, and when a river mouth on the west is opposite to one on the east, the country between is narrowed, and trading is thus made easier between east and west This is seen in the cases of the Severn and Thames, the Mersey and Humber, and the Clyde and Forth Because of the continental shelf, the lower parts of the rivers are tidal, and this is a great aid to shipping Many important towns stand where streams enter the sea The mouths of some of the rivers which run into the North Sea are opposite river mouths in Europe, and trade is carried on between ports thus facing each other

Rivers have run ever since the sun has shone and rain has fallen on the earth, and the rivers are always at work changing the land around them They wash away the rocks over which they flow, sometimes breaking off fragments and grinding them together until the pieces are turned into silt or mud This silt is spread out over the channels of the rivers as they glide down slowly to the sea.

Story.—The following story of *Chalk*, by Richard Wagner, will be interesting and informative to the children:—

"In the sea live great whales, as big as a house and as wide as a room, and in the sea live also little chalk animals, so tiny that the naked eye can hardly see them. Twenty of them placed together are only as big as the point of your pencil, and yet each of these is one of God's creatures, which He has marvellously fashioned and cares for as one of His children.

"The chalk animal has a dainty little house, almost like the shell of a snail, and with numerous chambers within, in which it lives Its body is a little piece of jelly, and the shell of its house white lime, which the little creature has separated from the water In the shell are minute holes like windows, or like the holes in a sieve, through which it stretches out tiny feet and feelers, looking like the delicate roots of a plant. These little feelers flow about in search of food, preferably other animals yet tinier than itself, and they likewise help the creature to move forward very slowly It has neither eyes nor ears, neither claws nor teeth, and yet it finds sufficient food.

"The old chalk animals have young, and these again have others, and they increase to many millions of millions down at the bottom of the sea, till no man could number them They live close together and always get on well with each other, and when the old ones die they leave their shells behind them As they crumble, the sea water moulds them together till they form a solid layer of white chalk Many of such layers go to make up a chalk bank, and many banks a hill. On the sea shore there are high cliffs and broad downs of white chalk, entirely built of the minute shells of the chalk animal

"From such a hill the piece of chalk has come with which the teacher writes on the blackboard If you look at a fragment of it under the magnifying glass, you can, to this day, recognise the shells of the chalk animal They are mostly broken bits, but there are whole shells among them

"All the monstrous whales of the world have never succeeded in building a single hillock, but the tiny chalk animals have built up miles of high cliffs and hills So you see the smallest creatures can do great things if they work hard and all pull together."

TEACHING NOTES

1. Introductory.—Refer frequently to the map during this lesson, pointing out to the class the central position of the British Isles in relation to other countries, the general arrangement of high and low land and the importance of the rivers. Show as many illustrations as possible of the districts mentioned Describe any parts known personally, and encourage the pupils who have visited other districts to talk of what they have seen. Such small conversations are desirable during this first lesson, as they tend to arouse the pupils' interest and focus their attention on the British Isles

2. Map reading.—During the fourth year in the primary school, map reading becomes increasingly important Considerable stress has been laid on its importance in the section on Practical Geography, which the teacher is advised to read carefully Do not give the children lists of names to learn, but let them find for themselves on a wall map, or preferably, in an atlas, the names of mountains, rivers, towns, etc , and prepare their own lists It is of importance to remember that the first question to be considered in the teaching of geography is—"Where is it?" The position of the British Isles on the globe should be noted so that children can appreciate the importance of their situation in the centre of the land world. A comparison should be made with the position of Australia in the centre of the water world

3. Continental Shelf.—The children will be interested to know that at one time the British Isles formed a continuous land mass with the continent of Eurasia. In many parts the North Sea is quite shallow. If a church were sunk in some parts of it, the spire would show out of the top of the waves The children might be reminded of their earlier lessons on fishing off the Dogger Bank where swarms of fish live in the shallow waters They should be reminded, too, of the rise and fall of the tides which most of them will have observed at the seaside.

4. Rocks and building material.—The pupils would be interested to see specimens, if available, of granite, chalk, limestone and sandstone Limestone, when burned in lime kilns, changes into quicklime, a white powder much used in agriculture It destroys insects, provides plant food, lightens heavy clay soils and strengthens sandy ones. Lime, mixed with water and sand, is used in the manufacture of mortar. It is added in the preparation of sugar to purify the juices, is also used in glassmaking, and, mixed with linseed oil, forms an embrocation useful in cases of rheumatism.

Cement is a special mixture of lime or chalk and clay which has been blended with water to a creamy mass called "slurry" and then heated in a kiln until reduced to "clinker" The clinker is finally ground into powder When used, cement is mixed to paste with a little water, and within a few hours it "sets" or hardens, and the hardening goes on for a year or more Portland cement is used for harbour building, and for all structures in which great and lasting strength is needed In restoring ancient churches, cement watered down is pumped through the joints of the old walls, and when it hardens, the joints become

stronger than they were when new. Winchester cathedral and St Paul's cathedral were restored in this way Britain keep the river mouths free from mud and allow steamers to sail up the rivers for many miles inland.

5. Memory work.—(*a*) The British Isles lie off the north-west coast of Europe. (*b*) The sea protects them and also connects them with nearly every country in the world (*c*) Because Britain stands almost midway between the continents, it is a market place for the whole world (*d*) The great mountain masses of Britain lie towards the west (*e*) There are plains in the east of England, in the centre of Scotland and over a large part of Ireland. (*f*) Granite is quarried for building purposes (*g*) Sheep feed on the chalk Downs (*h*) The English plain is made of clay. (*i*) Fruit trees grow well in sandy districts (*j*) The tides around

6. Exercises.—(*a*) Describe the position of the British Isles. (*b*) How do you think the position has helped to make them important? (*c*) Why is it a good thing that there are tides round Britain? (*d*) Draw a map of Great Britain and mark off England, Wales and Scotland (*e*) Where are the chief mountains in the British Isles? (*f*) Tell all you know about granite. (*g*) What is the name of the hills in south-east England? (*h*) Say all you know about them. (*i*) Describe the soil of the English Plain (*j*) For what are sandy districts suited? (*k*) Why do English rivers seldom flood their banks? (*l*) Why has England many famous seaports?

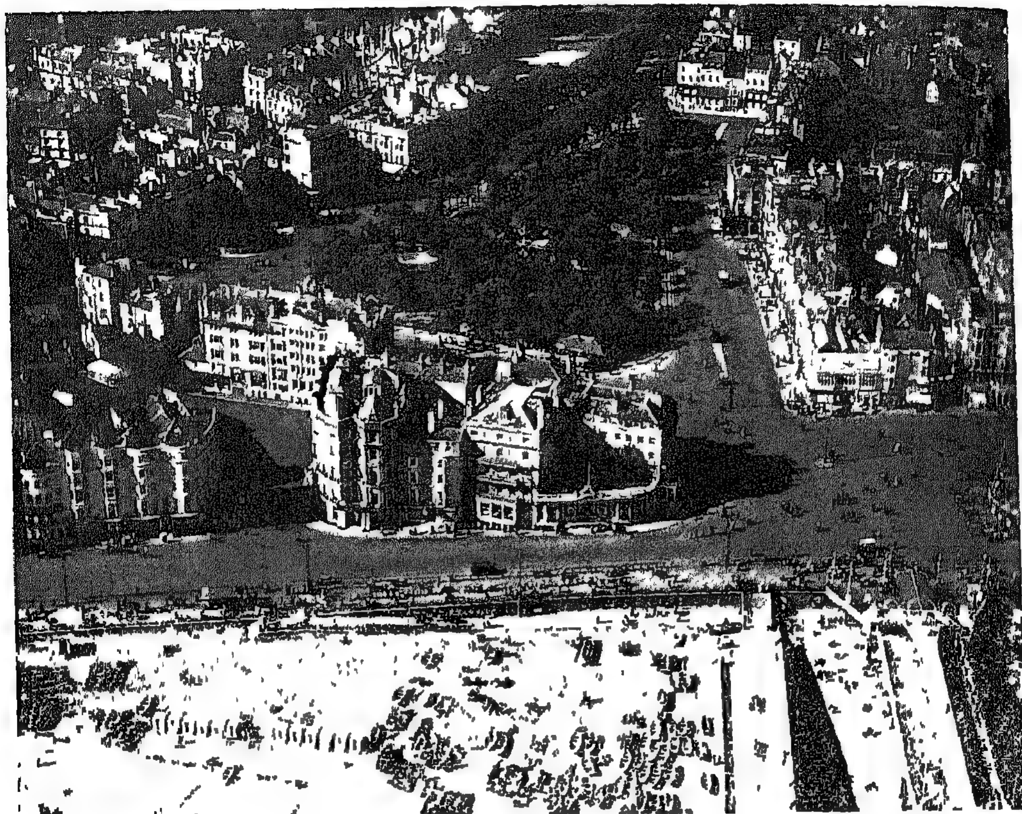
II. CLIMATE

CLIMATE, or weather, plays an even more important part in the life and work of the people than either the height of the land or the kind of soil. In country districts the climate settles the question whether the land is to be used for dairy farming or for crop growing, and the kinds of crops grown also depend upon the weather In some hot, wet climates men cannot work well, for some have not the energy even to grow food for themselves In other climates the people are always lively and strong and ready for work

The climate of the British Isles is the best possible for work It is neither too hot nor too cold, neither too wet nor too dry The British people can always work in comfort, though the kind of work that they do depends upon the districts in which they live.

When considering the climate of a country we have to observe the amount of heat and cold in the hottest and coldest months, and notice for how many months the very cold weather lasts. We also study the amount of rainfall, the seasons in which the rain comes and the general direction of the winds

Latitude.—The heat or cold of a country largely depends upon its latitude, or its nearness to the equator When the sun's rays shine straight down upon a land they are hotter than when they reach the land slantingly, and the more they slant, the less heat they give. Consequently the equatorial countries, those that are directly beneath the sun for a part of the year, are much hotter than those in the polar regions, where the rays slant greatly. There is a gradual falling off of heat from the equator to the poles The earth can be divided into belts or zones according to the amount of heat given out by the sun. The British Isles lie within the north temperate belt,



[Photo · Central Aerophoto Co., Ltd

THE SEA FRONT AT BRIGHTON

("London on Sea" is the familiar name of this resort)

and so their climate is neither too hot nor too cold

Arrangement of land and water.—Latitude alone cannot settle the climate of a country. The coldest and hottest regions of the earth are not found at the poles and the equator The arrangement of land and sea has also to be considered Land and sea do not heat at the same rate The land heats about five times as quickly as the sea, and therefore countries far inland become very hot during the summer months The sea, because it does not heat so quickly, is cool in summer, and any air moving in from the sea to the land in summer is cool Thus we find that islands and coastal districts are cooler in summer than inland regions. In winter the reverse takes place. The land which became hot so quickly in summer now loses its heat rapidly, and the air over districts far inland in winter is very cold. The sea is slow to heat, but it is also slow in giving up its heat, and air moving in from the sea in winter times gives warmth to the land Coastal regions thus have warmer weather in winter than inland districts

To sum up, places near the sea have cooler summers and warmer winters than places inland

High and low land.—Some parts of the British Isles have very different weather from that in other parts This difference is

largely due to the height of the land. The higher we go, the colder it becomes. For every rise of 300 feet the thermometer falls one degree. The highland regions, therefore, have colder weather than the lowlands.

The highlands also form a barrier against the winds. The wind is forced upwards in order to find a way over them. In rising, the wind is cooled and the water vapour in it changes into droplets of rain, just as the steam from a kettle turns into water when a cold slate is held against it. The rain falls on the highlands, and thus we find that they are regions of heavy rainfall, the rain being heaviest on the side facing the wet winds. The other side is much drier, for once the winds have passed over the mountain tops they descend and are warmed, and warm air can hold a greater amount of water vapour before it condenses and falls as rain.

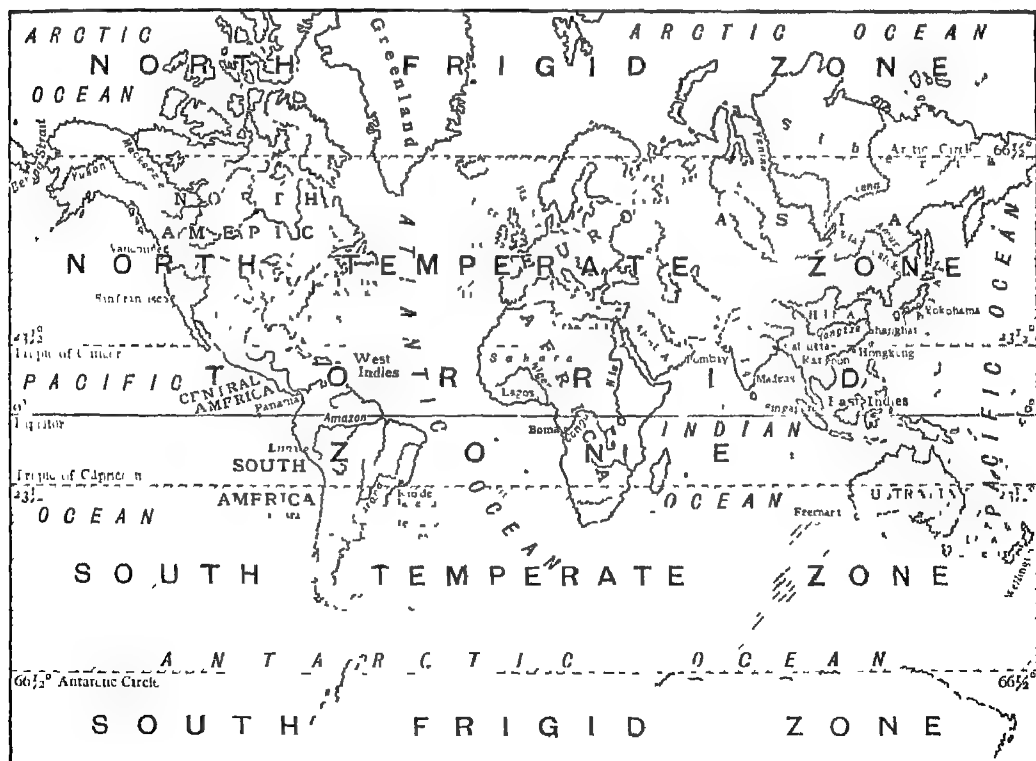
Summary of the conditions that affect the climate of the British Isles

(*a*) The British Isles lie in the north temperate belt.

(*b*) The British Isles lie in the belt of the south-westerly winds.

(*c*) The British Isles lie to the west of the mainland of Europe and are thus open to the influence of the Atlantic ocean.

(*d*) The high ground is on the west, and offers a bold front sloping sharply to the Atlantic. To the east the land slopes away more gradually to the North Sea into the low plains of the east and south. Here and there, as



THE WORLD SHOWING THE ZONES

at the Severn mouth and the Cheshire plain, the low ground reaches back into the highlands, breaking them up into blocks. Through these gaps the west winds find their way eastwards

(e) The lowlands of the east are affected by the climate of the continent of Europe, which makes them hotter in summer and colder in winter than other parts of the British Isles

Temperatures, or cold and heat of the British Isles.

Winter.—In winter, a line drawn from north to south through the middle of the British Isles divides them into (a) an eastern section with January temperatures below 40° F.—cold—and (b) a western section with January temperatures above 40° F—warm. The dividing line runs along the west coast of Scotland, from north to south through the middle of Wales, and south-east across the Bristol Channel to the Isle of Wight

Coldest parts of the British Isles in January:

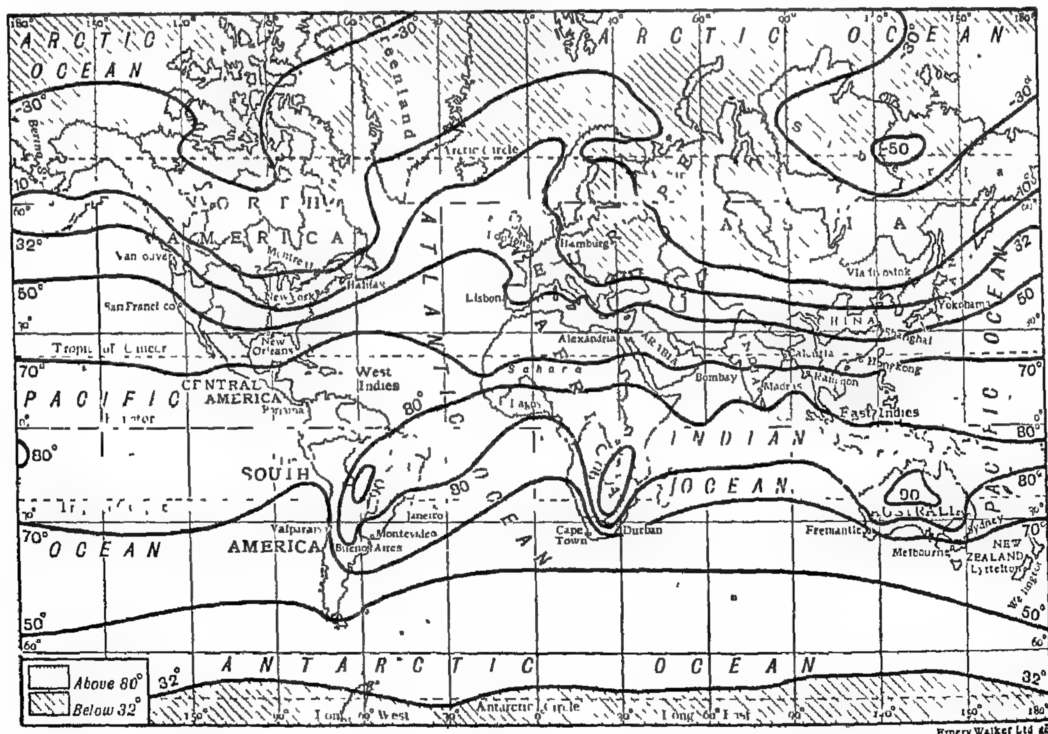
(a) A narrow belt in the north-east of Scotland, running just inland from the Dornoch and Moray firths

(b) A larger area, including the eastern part of the Grampians and the east coast of Scotland from Aberdeen to St Andrews.

(c) The regions around the Cheviot hills

(d) The largest area—the eastern counties of England from Flamborough Head to Shoeburyness, extending inland to the west of Leeds, Sheffield, Leicester and Bedford

(e) North Central Ireland, which is in the middle of a land mass, away from the direct influence of the Atlantic ocean



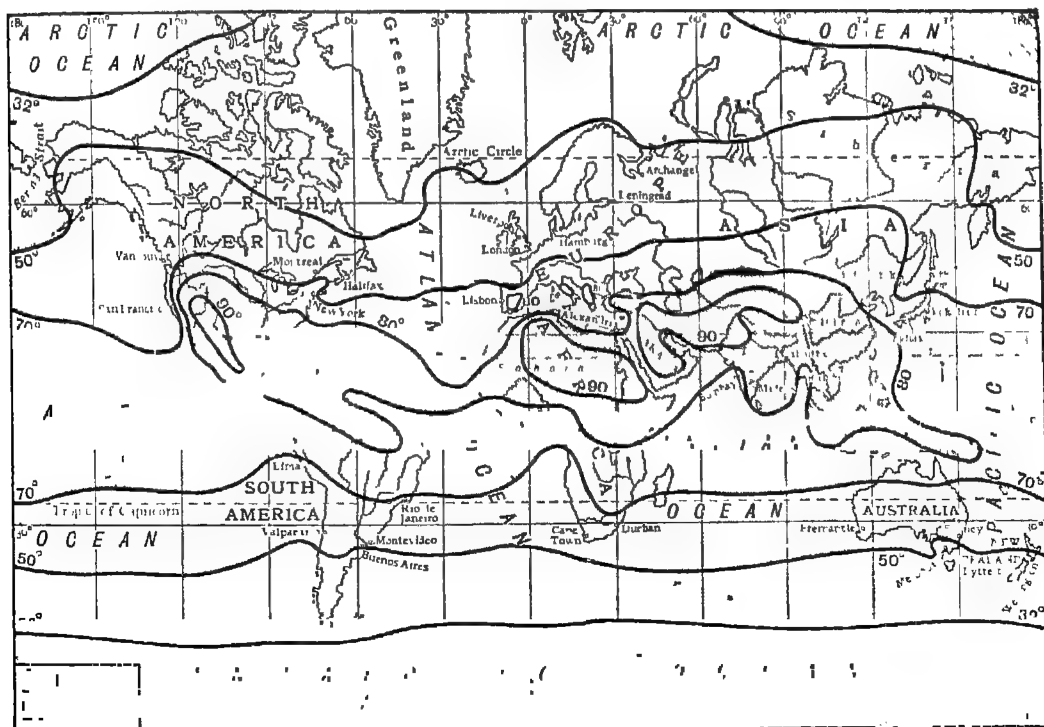
THE WORLD—WINTER ISOTHERMS

Warmest parts of the British Isles in January

(a) The southern islands of the Outer Hebrides.
(b) The west and south-west coasts of Ireland.
(c) Pembroke, in the south-west of Wales
(d) Devon and Cornwall

It is thus plain that in the British Isles in winter, the sea has a stronger influence than latitude on the climate, for places in the north-west of Scotland are warmer than those much farther south on the east coast of England. The winds of the British Isles usually blow from the south-west, and have travelled over a great expanse of the Atlantic ocean The sea, as we have seen, is warmer than the land in winter, thus the air coming in from the south-west will be warmer than that over the land The waters of the Atlantic, moreover, have extra warmth They have drifted slowly towards the British Isles from very hot regions. This drift of warm water is a slow ocean current known as the *North Atlantic Drift*, and as the south-west winds obtain warmth from the drifted waters they cause the south-west and west of the British Isles to have mild winters. The eastern parts of the British Isles do not benefit to anything like the same extent, and are also chilled by cold winds from the continent

Summer.—In summer, a line drawn through the middle of the British Isles from east to west divides them into (a) a southern section with July temperatures above 60° F.—hot—and (b) a northern section with July temperatures below 60° F—cool The dividing line runs westwards from just north of the Humber and York, dips southwards as far



THE WORLD—SUMMER ISOTHERMS

as Pembroke when crossing the Irish Sea, and rising again runs westwards across Ireland from just north of Dublin to Galway, finally dipping again down the west coast of Ireland. The direction of this line shows that latitude and not the sea has the stronger influence on the climate of the British Isles in summer. The influence of the sea is still to be seen (*a*) in the fall of temperature over the sea and the rise of temperature over the land, (*b*) in the weather of the south-east coast which is cooler than that inland, and (*c*) in the cool west coast of Ireland. Generally speaking, the temperature grows less with the latitude—that is, cooler the farther north we go.

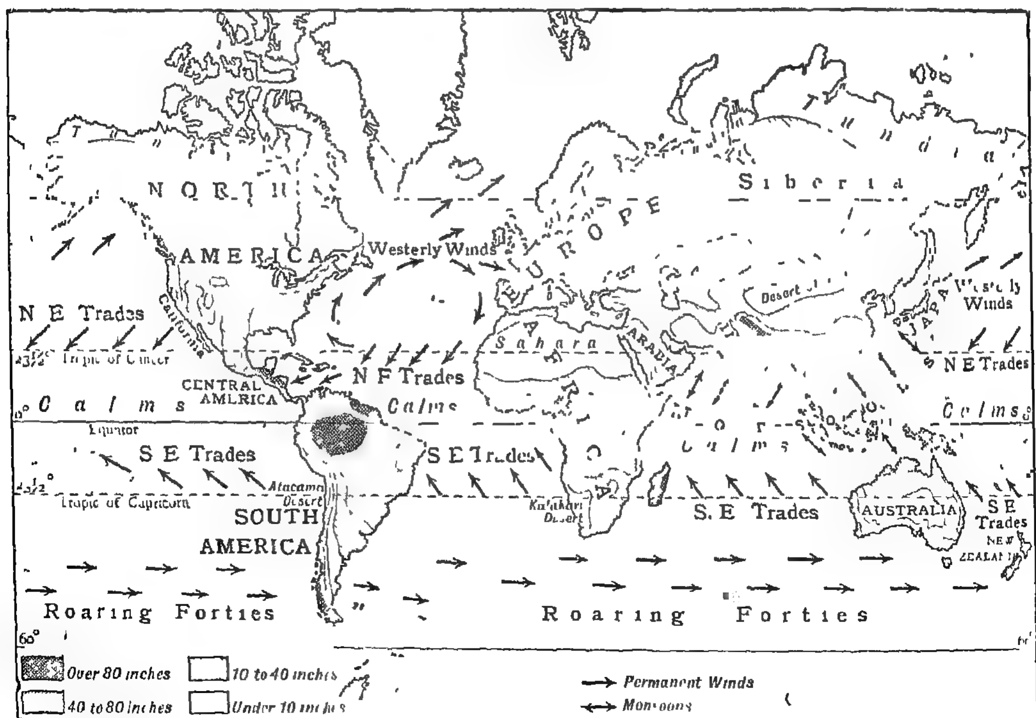
Hottest parts of the British Isles in July—These are eastern England from the Thames to the south of the Wash, the midlands and southern England.

Coolest parts of the British Isles in July—These are northern Ireland and Scotland

Summary of temperatures—

(*a*) South-east—hot in summer and cold in winter.
(*b*) North-east—cool in summer and cold in winter.
(*c*) South-west—hot in summer and mild in winter
(*d*) North-west—cool in summer and mild in winter.

Rainfall of the British Isles.—The two important influences on the rainfall are the winds and the high and low land. The British Isles lie in the belt of the westerly winds, which have travelled many hundreds of miles over the warm waters of the North



THE WORLD SHOWING WINDS AND RAINFALL

Atlantic ocean Being warmed, these winds have in their passage over the ocean taken up a great deal of moisture They meet no barrier until they reach the British Isles, where the main highlands lie directly in their path The winds are forced to rise, become cool and drop the greater part of their moisture as rain upon the highlands The western slopes receive heavier rain than the eastern, for beyond the crest of the mountains the winds no longer need to rise They descend to the lowlands, become warm again and take up moisture instead of giving it out So the eastern side of the British Isles is drier than the west No part of the British Isles is really dry, enough rain finds its way across to provide water for crops

The rainfall map of the British Isles is very like the relief map, which shows the high and low land The highlands are the regions of heaviest rain The Highlands and Southern Uplands of Scotland, the Lake District, the Pennines, the Welsh mountains and the mountains of the west of Ireland all have a rainfall of over 60 in. a year. The lowlands receive under 40 in. They are driest in the east around the Thames, Wash, Humber, Firth of Forth and Moray Firth

When learning about the rainfall of a place we must know not only the amount of rain received during the year but also the seasons in which it falls—whether there is a wet season followed by a dry season, or whether the rain falls evenly throughout the year. In the British Isles there is no specially wet or dry season; rain falls at all seasons Long periods with or without rain are not usual The rain of the British Isles has also a more lasting effect than the rain of hot countries It falls steadily, and thus a great part of it has time to soak into the ground, to be stored up for the use of plants later on The rain in very hot countries often falls in heavy downpours, of which the greater part runs away into streams and rivers and does not sink into the ground

Chief Climatic divisions of the British Isles.—

1 *South-east*—London, Norwich, Lincoln
Temperature—hot in summer and cold in winter
Rainfall—dry

2 *North-east.*—Aberdeen, Edinburgh, Newcastle
Temperature—cool in summer and cold in winter
Rainfall—dry

3 *North-west*—Stornoway, Londonderry, Galway
Temperature—cool in summer and mild in winter
Rainfall—moist

4. *South-west*—Waterford, Plymouth
Temperature—hot in summer and mild in winter
Rainfall—moist.

Depressions.—An account of the climate of the British Isles cannot be complete without reference to the causes of some of its peculiarities Weather reports frequently mention *depressions.* They may state—"A feeble ridge of high pressure crossing the country from the west will be succeeded by a depression now over the eastern Atlantic. An interval of fair weather is likely generally at first, but will give place to unsettled conditions in the west, and these will probably spread slowly eastward" A depression is a system of low pressure from the centre of which pressures increase in all directions. Into the centre of the system winds blow spirally in a counter clockwise direction in the northern hemisphere The air at the centre is forced by the inward movement of the winds to rise It then becomes cool and its vapour condenses into rain. On an average more than fifty depressions cross the British Isles each year, and they are more frequent in winter than in summer Cyclones, tornadoes and typhoons, common in many tropical parts of the world, are similar to British depressions, differing only in intensity A cyclone is smaller in diameter than a depression, and consequently the pressure differ-

ence between the outer circle and the centre has what is described as a steep barometric gradient The steeper the gradient of a cyclone the more violent are its winds. The approach of a depression towards the British Isles is heralded by a cloudy sky and often there is a halo round the moon Soon the sky becomes heavy with rain clouds. Gusty winds accompany the rain, which is heaviest during the passing of the low pressure system, and afterwards subsides into showers Portions of cyclones often pass over Scotland Records of atmospheric conditions over vast areas are now transmitted by wireless to England by observers in ships, aircraft and distant meteorological stations, thus enabling frequent broadcasting of highly accurate weather forecasts.

TEACHING NOTES

1. Latitude.—Children who have been through the courses for the previous years will be well aware of the effect of latitude on the climate of a country Show again some of the Class Pictures of life in India Ask why British people in hot lands rest during the middle of the day Show a map of the zones or belts of climate or draw a sketch on the blackboard

2. Effect of heat on land and water.—Children who have been to the seaside will remember how the cool breezes blow from the sea to the land during a summer's evening. They will know, too, why thousands of people, especially invalids, go to the southern seaside resorts during the winter. Those children who have relatives in different parts of the British Isles will frequently be able to compare the weather in those parts with their own.

3. Height of land.—Refer to the thick, warm clothing worn by airmen Let the children look for pictures of snow-capped mountains. Many will have heard how the snow-clad mountains feed the rivers of India and Egypt. Show diagrammatically on the blackboard how winds from the ocean are forced upwards to the cooler regions of barrier mountains. Remind them of the Chinook winds which melt the snows of the Canadian prairies.

4. Temperature.—Let the children look again at a thermometer and notice the freezing point—32° F. Compare with the temperature in the classroom. Also refer again to winter temperatures of Canada where the thermometer reading is often much below zero. Note the isothermal lines on the maps on pages 408 and 409 Many children will have heard of the "Cornish Riviera," and of the early fruits and vegetables received from Cornwall and the Scilly Isles

5. Rainfall.—The importance of doing practical work in connection with rainfall is very great. Children have little idea of what amount of rain is represented by a fall of (say) ½ in. They will eagerly compare the rainfall of England with that on the tea plantations of Assam, or the hot, wet forests of New Guinea. Remind them again of the story of the Egyptians and the shadoof; of the artesian wells and irrigation works of Australia. The rainfall map resembles the relief map of the country, for the wet and high regions are one and the same. The high western edge of the Scottish, Irish, English and Welsh mountains has a rainfall exceeding 60 in a year. Eastern England and Scotland receive less than 40 in., but more than 20 in ; thus there is always sufficient water for agriculture without irrigation.

7. Memory work.—*(a)* The British Isles lie within the north temperate belt, and are neither too hot nor too cold. *(b)* The British Isles lie within the belt of the south-westerly winds and are neither too wet nor too dry. *(c)* Districts near the sea have cooler summers and warmer winters than districts inland. *(d)* The nearness of the continent makes eastern England hotter in summer and colder in winter than other parts of the

British Isles. (*e*) In winter the western half of the British Isles is warmer than the eastern half. (*f*) In summer the southern half of the British Isles is warmer than the northern half (*g*) The wet south-westerly winds are warmed by the North Atlantic Drift. (*h*) The heaviest rainfall is on the western highlands (*i*) The driest parts are in eastern England and Scotland (*j*) Because the rain falls steadily and at all seasons, floods or dry areas are seldom found in the British Isles.

8. Exercises.—(*a*) What do we mean when we speak of the *climate* of a country? (*b*) How does climate affect the life and work of the people? (*c*) What is *latitude*? (*d*) Why do the sun's rays give more heat to lands near the equator than to lands in polar regions? (*e*) Explain how the sea influences the temperature of a country (*f*) Which are the coldest and which are the warmest parts of the British Isles in winter? Explain why. (*g*) What is the North Atlantic Drift? (*h*) Which are the coldest and which are the warmest parts of the British Isles in summer? Explain why (*i*) In which direction would you travel to get warmer in (1) winter, (2) summer? (*j*) Why does rain fall most heavily on the western districts of the British Isles? (*k*) How is the rainfall in the British Isles different from that in hot countries? (*l*) Compare Cornwall and Essex with regard to rainfall and temperature. (*m*) Which part of the British Isles do you think has the most attractive climate on the whole? Give the reasons for your choice.

III. WHEAT—POTATOES—FRUIT

Wheat.—Wheat is the main bread crop in the British Isles. Vast quantities of wheat and flour are used in this country each year, and about one-fifth of the whole amount is supplied by our own farmers The British Isles, even if every acre of wheatland were used, could not raise enough wheat for the people's needs Each year large imports of wheat come from Canada, India, the Argentine, Australia and the United States of America.

Not everywhere in the British Isles is either the soil or the climate favourable for wheat growing It is carried on only in special areas To yield a fine harvest wheat needs to be grown in a fertile soil of good depth The soil must be neither too heavy nor too light. During the growing season there must be enough rain to enable the young plants to grow tall and bring forth heavy ears. When the heads have swollen, a dry spell of weather with plenty of sunshine and a temperature of 60° F is necessary, so that the ears may ripen and be harvested in a dry state. A level soil makes the farm work easier

In eastern England the small rainfall and hot sunny summers favour the growth of wheat Here are to be found nine-tenths of the wheatfields of the British Isles They lie between the Vale of York and the Thames, and include the Vale of York, Holderness, Lincolnshire, Norfolk, Suffolk, Cambridgeshire and Huntingdonshire On the dry fertile lands at the head of the Firth of Forth is a small but important area of wheatland Here, owing to the excellent methods of cultivation, the number of bushels of wheat to the acre is the highest in the kingdom

Though wheat is the chief crop of eastern England it is not the only crop grown Wheat takes its place in a system of mixed farming—cattle farming and crop growing done on the same farm—and there is a special arrangement of field cultivation called the *rotation of crops*, in which beans, clover, root crops and wheat are grown



PLOUGHING IN ENGLAND

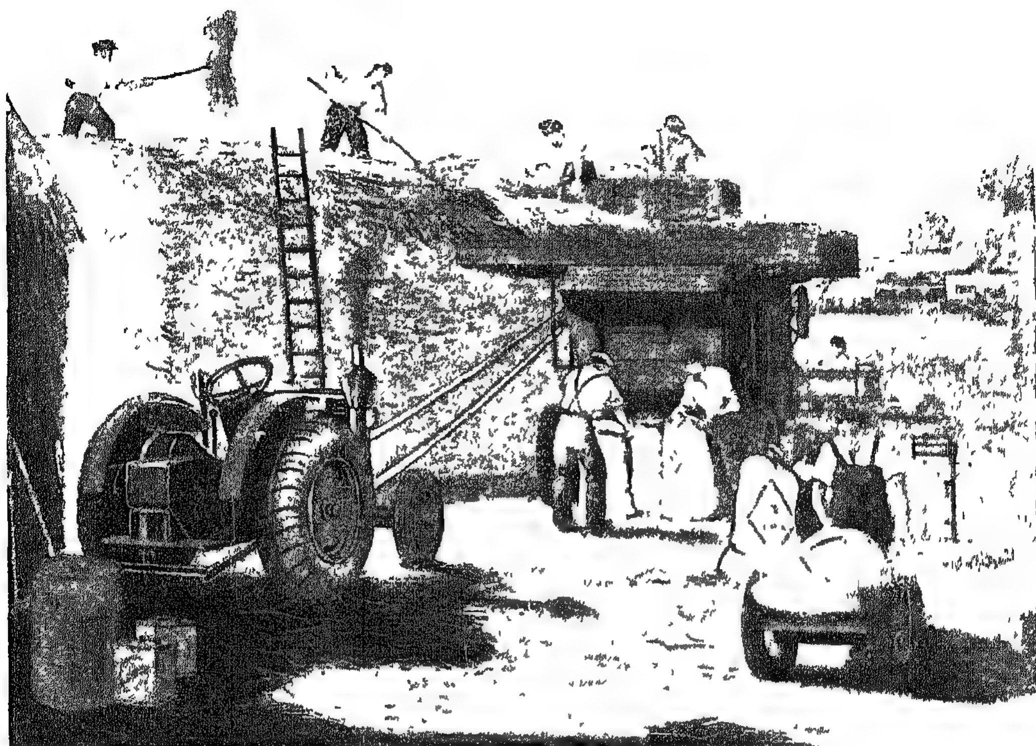
(Class Picture No 104 in the portfolio)

in each field in turn Mixed farming is good both for the soil and for wheat clover and beans give to the earth mineral food, manure from the animals enriches it, and the thinning, weeding and hoeing needed by root crops make it clean

Because of the mild English winters, the farmer is able to sow his wheat in the autumn and need not wait until the following spring, as is the case in the colder wheat-lands of Canada By being sown in the autumn, the seeds shoot before winter sets in and obtain a good hold of the soil During the winter months the roots grow underground, so that when spring sets in, the plant can shoot rapidly ahead above ground. Autumn sown wheat gives heavier yields than that which is spring sown.

Certain towns in the east of England have become important centres for the distribution of wheat and for the sale and maintenance of farm machines Norwich, Peterborough, Lincoln, King's Lynn, Ipswich and Bury St Edmunds are such towns They are market centres because they have grown up at points which are meeting places of many routes, and farmers go to them to conduct their business

Potatoes.—Potatoes have come to play a very important part in the food of the people of the British Isles To-day the crop



THRESHING IN ENGLAND

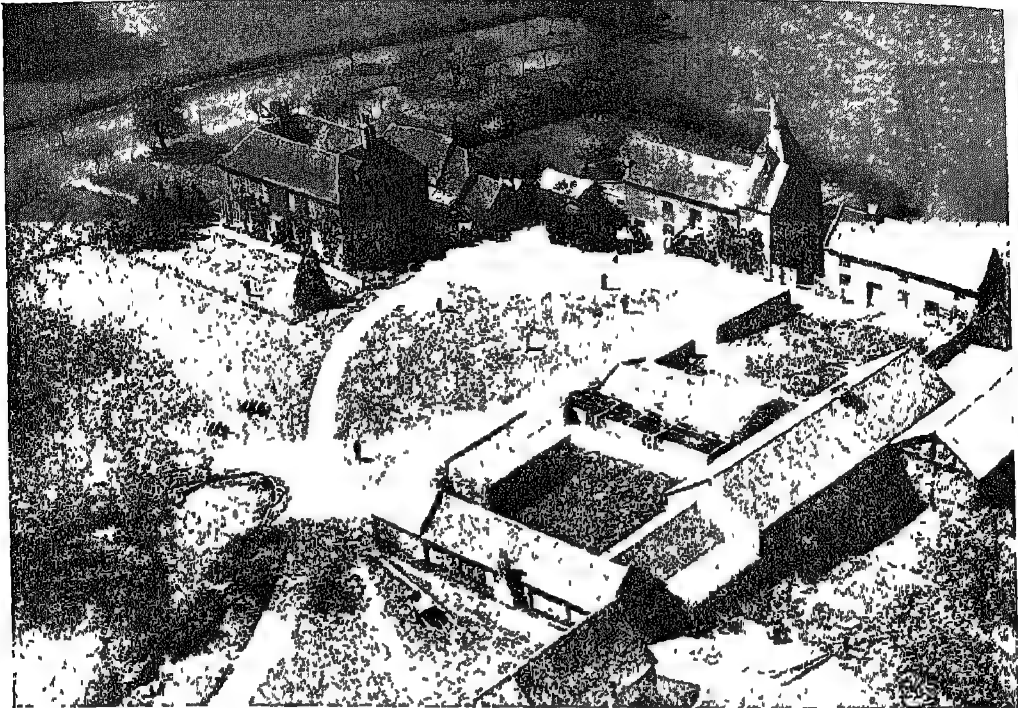
(Class Picture No 105 in the portfolio)

is raised in all parts of the country The holders of allotments round about the large cities such as London and Manchester have their rows of potatoes, the crofters or small farmers living in the Highlands of Scotland have their potato patches Farmers in eastern England grow potatoes to supply the needs of thousands of people, farmers of the far south-west, of Cornwall and the Scilly Isles, grow them in the early months of the year to give London and the big cities their first "new" potatoes. The crop is widespread, but there are certain areas where the soil is specially suitable and potato growing has become very important

As with wheat, potatoes need a good depth of soil, so in some cases wheat and potatoes are grown together, and particularly is this done in the eastern counties In the Fens, round the towns of Spalding, Boston, Wisbech, Cambridge and Ely, potato growing is very important and railways carry the produce to markets in London, the north and the midlands

Extra workers are needed in the potato fields when the crop is ready for harvesting Although the crop may be "lifted" by machines, the actual "picking" has to be done by hand, and many townspeople often spend a healthy and remunerative holiday by helping the villagers with the work

Potatoes can stand more wet than wheat, so we find them in other parts of the British Isles as well as the eastern counties



[Photo Aerofilms, Ltd

FARM AT MALVERN, WORCESTERSHIRE

(A typical scene in the orchard region of the lower Severn Note the conical roof of an old oast-house)

The large numbers of people in the factory towns of Lancashire and Staffordshire ensure a splendid market, and the farmers living near at hand have taken up potato growing The rich sandy soil of north Cheshire is well suited to the growth of early potatoes, while the peaty soil of south Lancashire is good for late kinds

In Scotland, too, many areas are given up to potato growing The fertile Carse of Gowrie along the northern shore of the Firth of Tay, Ayrshire and the region around Dunbar are some of the chief districts.

The number of acres of potatoes grown in Ireland is more than that in the whole of Great Britain. About one-sixth of all the British potatoes grown is raised in that part of Ireland stretching from County Down to County Donegal The chief market for these potatoes is across the Irish Sea in the manufacturing district of northern England.

Fruit.—Another crop which is being used more and more largely for food by the people of the British Isles is fruit There are many kinds of fruit, suited to the many different climates and soils of the world Nowadays by means of canning and the use of freezing rooms on board ship, fruit can be brought to us from all parts of the world. We get bananas from the West Indies, oranges from Spain and South Africa, grapes from Mediterranean lands, the Cape and Australia, and apples from Canada, Australia and New Zealand Some of them



THE BRITISH ISLES—CROPS

are still "fresh" when they arrive, others have been dried, bottled or canned before being shipped. Some fruits we can grow at home in England and eat when they are really fresh

Although people up and down the country may grow apple or pear trees, or have their raspberry canes or their strawberry beds, fruit growing for trade is carried on only in special districts Soil and sunshine are the two most important points which affect the choice of areas for fruit growing A light and rather sandy soil is best Plenty of sunshine is needed, for it is the sun that turns sour into sweet fruit. The fruit-growing areas, then, are in sandy districts and in regions of little rainfall. They are:—

District.	Fruits Grown.
1. *Kent*: (*a*) Along the lowlands bordering the mouth of the Thames (*b*) Around and to the south of Maidstone	Apples, pears, cherries, strawberries, hops
2. *Hampshire* Southampton.	Strawberries.
3. *The Fenland*. chiefly around Wisbech and Spalding, and along the Fen border in Cambridgeshire (Histon).	Strawberries, gooseberries, currants, raspberries, plums, apples, pears
4 *Herefordshire and Worcestershire* Vale of Evesham	Apples, pears, plums, hops (Hereford)
5. *Somerset*. Vale of Taunton.	Apples
6. *Essex*. Tiptree.	Currants, gooseberries, raspberries, strawberries, plums, apples, pears
7 *Scotland* Carse of Gowrie	Raspberries.

Of these districts, the most important are in Kent, Hampshire and the Fens. The fruit areas of Kent and Hampshire produce about one-third of the whole British crop of strawberries, and the Fenlands produce nearly half.

Hops are an important crop in two places in England—Kent and Hereford They are grown for the flowers, which when roasted are used by brewers to impart a bitter flavour to the beer.

All the soft fruits that will not keep need to be sent to market with the greatest speed Rapid transport between the fruit districts and their markets is necessary Kent is well served with roads and railways leading to the vast market of London. Hereford and Worcester are linked up by road and rail with the midlands. The markets for the Fenlands are the north, the midlands and London.

Not all the fruit is eaten fresh Some of it is made into jam and some is canned. Certain towns have become important jam making and canning centres, the chief being Histon, Wisbech, Tiptree and Dundee.

The apple is the chief British fruit. It is the longest lived and largest of the fruit trees of temperate lands, and with success yields a heavy crop The insect pests and fungi which attack the apple may be kept in check by spraying with chemicals Apple trees adapt themselves to a wide range of soil conditions, but favour sunny aspects A large tree will often produce up to twenty barrels of fruit a year. Pears and plums can be grown under much the same conditions as apples, but it should be noted that, as commercial products, they are restricted to the area south of the river Trent, owing to the risk of late spring frosts north of that river. Kent specialises in apples and cherries and has become an orchard county. Its nearness to the great metropolis of London means that there is always a market for its produce.

Apples are also associated with Devon which is famous for its production of cider Millions of apples are used annually for cider-making in south-western England Dorset, Somerset, Hereford and Worcester are specially associated with cider production

The cultivation of small fruits such as strawberries, raspberries, gooseberries and red, white and black currants is, because of their perishable nature, largely determined by the proximity of a local market Thus Kent and the home counties produce large quantities mainly for London Raspberries for jam making are grown in the Lowlands of Scotland, and there is a special orchard area in the Carse of Gowrie near Dundee.

The manufacture of jams and preserves is usually the industry of ports near fruit-producing regions in the British Isles Thus Dundee, originally basing its jam making upon local fruit, now flourishes mainly upon imported varieties Its speciality of Seville orange marmalade is an indication of this London has many jam making factories It is near the orchard counties and is able to supplement its supplies of raw material by import.

Although fruit cultivation is carried on in definite orchard areas of the British Isles, it is also important to most farmers. It must be remembered, too, that the home production of fruit is inadequate for the people's needs, and only by overseas trade are supplies kept up to the requirements of the country The Empire trade in fruit has become extensive, as may be seen by the large arrivals of Canadian and Tasmanian apples. The difference in the harvest seasons of Canada and Tasmania is a point of interest Because these countries are in different hemispheres, the supplies from one are plentiful when those from the other are scarce

TEACHING NOTES

1. Cereals.—It is interesting to note that the cereals, wheat, barley, oats, rye, maize and rice, are the basic foods of humanity, the particular variety in use varying from land to land These cereals are the fruits of different kinds of grasses, and they possess two qualities worthy of note—they can with proper care be stored for long periods, and they can be transported over considerable distances without suffering damage A study of samples of the cereals reveals that they are all hard and tough and have sound protecting skins, and it is to these properties that the ease of carriage is due

2. Industries of the wheatlands.—The wheatlands have given rise to special industries in the agricultural areas Towns such as Lincoln, Gainsborough, Grantham and Ipswich, in the midst of the farming area, have specialised in the manufacture of farm implements These are often bulky and difficult of transport, and are best produced in the areas where they are required An abundance of straw led in early days to the use of that material in the industries of Luton and Bedford, while the manufacture of biscuits at Reading was no doubt established owing to the supplies of wheat in the neighbourhood. Flour-milling is another obvious industry of a wheatland

3. Wheatland.—The following normal percentages of arable land under wheat cultivation are interesting —

Huntingdonshire	28 8
Cambridgeshire	26.8
Essex	24 5
Suffolk	19 6
Lincolnshire	17 2
Norfolk	16 3

4 Wheat and potatoes.—The normal acreage of land under wheat and potatoes in the British Isles is shown in this table —

	Wheat	*Potatoes*
England and Wales	1,300,000 acres,	519,000 acres
Scotland	51,000 ,,	145,000 ,,
Ireland	37,000 ,,	520,000 ,,

5. Mixed farming.—This is characteristic of British agriculture, and should be explained clearly to the class. It means that attention is given to the cultivation of crops, the rearing of cattle, sheep, pigs and poultry, and, in many cases, to the preparation of the dairy products British agriculture does not pretend to provide the people of the country with their daily bread; the land suitable for the purpose is not large enough to provide for the great number of people engaged in other types of work. The great need of the large centres of population for

fresh milk, freshly cut vegetables and other quickly perishable commodities which the British farmer can produce, has been one of the reasons for the development of mixed farming Much of the produce which the farmer can grow is also good food for cattle, sheep, pigs and poultry, and it is in his interest to keep a certain number of these creatures on his farm. The great expanses of land and small populations of Canada and Australia, on the other hand, produce grain for export

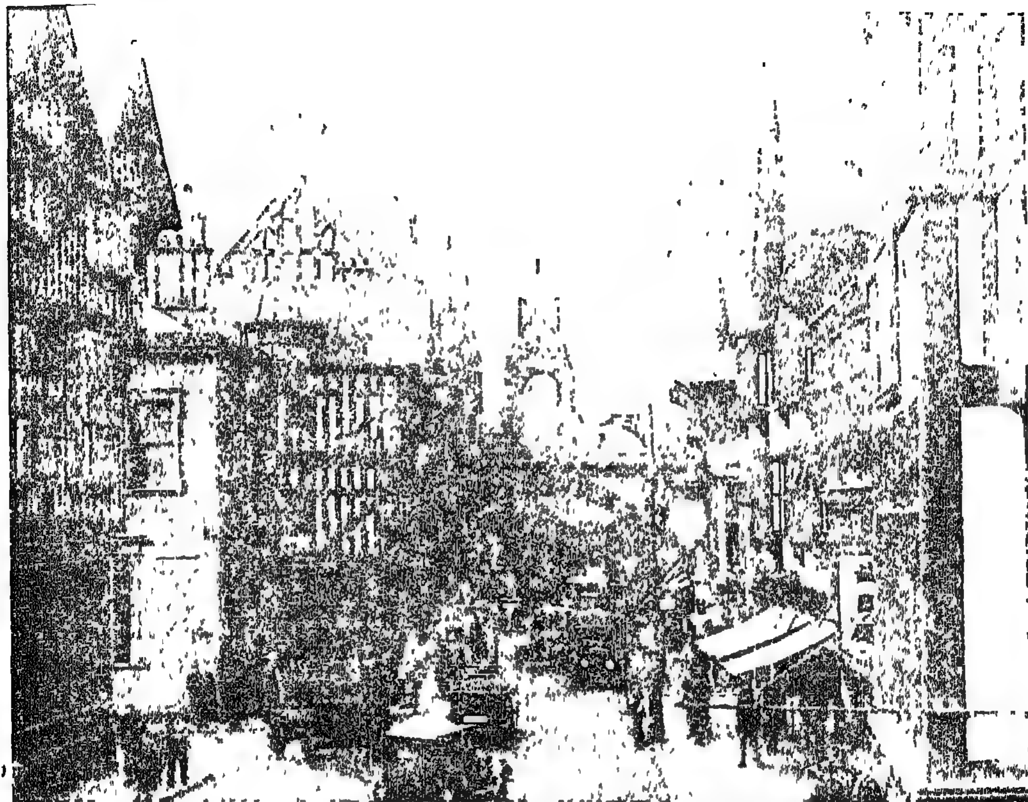
6. Frost.—When wheat is spring-sown the land is ploughed in autumn and left in big lumps, so that as much as possible is exposed to the air This is called "loose digging" The cold of winter pulverises these lumps and produces a fine tilth Children know that pipes are sometimes burst during a severe winter, and the great lumps of earth are split up by the frost in the same way. The clay contains a large amount of water which on turning to ice expands and disintegrates the clods.

7. Dundee.—The railway from Perth which runs along the northern bank of the mouth of the Tay passes through one of the garden districts of Scotland called the *Carse of Gowrie.* Here stands the city of Dundee. It is on the dry east coast of Scotland, facing southwards, and is protected by the Sidlaw hills Consequently fruits are grown and made into jam at the factories in Dundee. Most of the marmalade that we buy is also manufactured here. The city is famous first of all for its great jute works Enormous quantities of the raw material are imported from India to be made into fabrics ranging from the roughest sacks to the richest carpets It also has important manufactures of linen and rope Dundee has a fine harbour and is the chief British port for sealing and whaling The Tay is crossed by a long bridge, and in the distance, at sea, may be seen the Bell Rock lighthouse, of whose bell we read in the poem about wicked Ralph the Rover Dundee is the third city of Scotland

8. Memory work.—(*a*) The drier east of the British Isles is suited to crop growing, and the wetter west to dairy farming (*b*) Wheat needs a deep, rich and level soil, rain during the growing season and hot, dry sunny weather for the ripening and harvesting. (*c*) The wheatlands of England extend from the Vale of York to the river Thames. (*d*) Lincoln, Norwich and Ipswich are important markets for the buying and selling of wheat, and they also manufacture farming machines (*e*) The largest crop of potatoes in the British Isles is grown in Ireland. (*f*) London and the manufacturing towns of Lancashire and Staffordshire are the best markets for potatoes. (*g*) The chief fruit districts are Kent, Hampshire and the Fenlands. (*h*) Important jam making and canning factories have been built at Wisbech in the Fenland, Histon in Cambridgeshire and Dundee on the east coast of Scotland. (*i*) Fruits grown in Britain are apples, pears, plums, cherries, strawberries, raspberries, gooseberries and black, white and red currants.

9. Exercises.—(*a*) What are the main divisions of England for (1) crop growing, (2) dairy farming? (*b*) Why is wheat from other lands sent to the British Isles? (*c*) What foreign countries supply the British Isles with wheat? (*d*) Describe the kind of soil and weather needed for wheat growing (*e*) Why is wheat grown in eastern England rather than in the west? (*f*) What is meant by "mixed farming"? (*g*) Explain the system of cultivation called the "rotation of crops." (*h*) Why is it a good system in Britain? (*i*) Tell the story of a field of wheat, from the preparation of the soil to the selling of the grain. (*j*) Give the names of market towns where wheat is bought and sold (*k*) In which part of the British Isles are the most potatoes grown? (*l*) What districts are good markets for the sale of potatoes? (*m*) Make a list of British fruits. (*n*) Why do fruit trees need plenty of sunshine? (*o*) What fruits are grown in Kent? (*p*) In what other parts of Britain is fruit grown?

IV. SHEEP—CATTLE—PIGS



[Reproduced by courtesy of L M S Railway

EAST GATE, CHESTER

Grasslands.—The crop best suited to the climate of the British Isles is grass. The rain falling at all seasons supplies it with moisture for growth The damp air keeps it green Even the frosts and dry periods of the English plain are not severe enough to kill grass The richest districts are found in the moister and milder lowlands of the west, where frost and dry spells are rare and short On the hill slopes in the west grass grows, too, but in the highest regions the heavy rains make the ground unfit for it, and instead of grass there are peat bogs and heather moors.

The British Isles may be divided into three broad belts according to the different uses of the land

1. *The lowlands of the east and south-east*—largely cultivated and given up to grain.
2. *The lowlands of the west and north*—pasture lands with a certain amount of cultivation of oats
3. *The highlands, particularly of the north and west*—clothed with bog and moor.

The division of the land into cultivated and uncultivated is settled by climate and

by relief—the arrangement of high and low land In the eastern parts of England and Scotland the relief is low on the whole, and the rainfall is low also In those parts where the yearly rainfall is less than 30 inches, the land is given over chiefly to crop growing

The western and northern districts, including the greater part of Scotland, northern England, Wales and Ireland, are a mixture of high and low land with heavier rainfall. In these parts, the lowlands and the lower slopes of the highlands are given over to grass, and the people are employed chiefly in pastoral work, that is sheep and cattle farming.

The highest parts are bog and moor, waste land in the first case, and, in the second, used for breeding wild animals and birds called game which are hunted at certain times of the year Crop growing in the west is carried on in the valleys and plains where the rainfall is less, but even there the growing of crops is not so important as the pastoral work

Generally speaking, the western half of the British Isles is the land of grass and, consequently, a region of pastoral farming.

	Highlands.	**Lowlands.**
England.	Pennines and Cheviots.	Cheshire Plain
	Lake District.	Plain of Hereford.
	Moors of the south-west	Plain of Somerset.
Wales.	Welsh mountains.	Northern lowlands (a branch of the Cheshire Plain).
		Southern lowlands (the Vale of Glamorgan, Gower Peninsula and Pembrokeshire)
Scotland	Southern Uplands.	Clydesdale
	Grampians	Ayrshire Plain.
	North-west Highlands.	Lowlands of Wigtown and Kirkcudbright.
Ireland	Mountains of the north (Connemara, Mourne, Antrim, Donegal)	Central Plain.
	Mountains of the south (Kerry, Wicklow)	

Sheep.—Sheep thrive best on dry grassland—dry either because of low rainfall, or because the rain sinks easily through the porous soil, or runs off quickly owing to the steepness of slope In wet regions sheep suffer from foot rot and other diseases.

In the British Isles sheep are widespread, playing their part in the system of mixed farming; but there are certain areas where sheep rearing is the most important work done These districts are found in both the east and west of the country In the British Isles the regions of dry pasture are of two kinds—(*a*) those due to porous rock, through which water soaks rapidly, and (*b*) those due to steep slopes.

In eastern and south-eastern England there are ranges of limestone and chalk hills which spread away from the high ground forming Salisbury plain Such hills are the North and South Downs, the Chilterns leading on through the East Anglian Heights to the Lincoln and Yorkshire wolds, and the Cotswolds leading on through the hills of Northampton and Lincoln Edge to the Yorkshire moors Limestone and chalk are porous rocks, and their surface is wet only when rain is actually falling The water sinks through the ground, leaving enough moisture for the growth of short, fine grass only Here is land excellent for sheep, but not so good for crop growing.

The limestone and chalk hills of eastern and south-eastern England have been for many hundreds of years the great sheep-rearing regions Particularly were they important in the Middle Ages, when Britain's wealth depended on wool It is said that the Hundred Years' War was paid for by wool.

The farmers bred sheep specially suited to their own districts. Thus there came to be the North and South Down breeds, the Southdown sheep being black faced, black legged and noted for their splendid meat, other breeds were the Lincolns and Leicesters, noted for their long wool.

Sheep are found on all the uplands of the English plain, though there are by no means so many as graze on either the Southern Uplands of Scotland or on the Welsh mountains. These two districts are the chief sheep-rearing areas of the British Isles

In the Southern Uplands we again find special breeds suited to their districts These are—(*a*) white faced, hornless Cheviots, on green pastures, (*b*) hardy, horned, black faced mountain sheep on coarse grass and heather, and (*c*) cross-breeds, a mixture of the other two, on the lowland farms

The mountain sheep are able to obtain a living where other animals would starve In the highlands above 1,000 feet the soil is both thin and poor. The grass that finds a home there is short and scanty, and often gives place to patches of bracken and heather. On this grass sheep, and sheep alone, can thrive

The mountain sheep are much smaller than the long-wools of the English plain, because they are more active, having to climb and wander long distances in search of food They are much hardier, and able to exist in spite of rough weather and scanty grass The meat obtained from mountain sheep is worth more than the wool. Their mutton is of excellent flavour and fetches high prices, especially is this the case with Welsh mutton, which always commands the highest prices in Smithfield market The wool, however, is not equal to that of other breeds, either in length or quality.

In Scotland and Wales miles of stone walls keep the sheep from wandering too far afield in search of pasture The shepherds, too, have learned to save themselves trouble by putting with each flock a certain number of old sheep that know how far the flock may wander, and that will not permit another flock to stray upon their ground The high pastures cannot be grazed all the year round In winter they are too bleak and often snow-covered. Most of the sheep are therefore brought down to farms in the valleys or in the plains along the coasts in August and September. The distance travelled by the sheep from summer to winter pastures may be as much as from 12 to 15 miles on foot. Yearling sheep, or sheep between one and two years old, are often taken from inland to coastal districts for the winter months They travel distances of from 30 to 75 miles, generally by train, and are taken from the Welsh mountains to the northern and southern lowlands of Wales—Pembrokeshire and Gower in Glamorganshire. During the winter the sheep are fed on roots and clover from the lowland farms, and on these the animals fatten, so that some are sold in April to the butcher, while the rest are sent back to the hill pastures

The collecting of the sheep for bringing down to the lowlands offers remarkable sights Dogs are trained to collect the sheep, which they do very cleverly, and it is wonderful to see an empty hillside become alive with hundreds of small moving animals, Sheep-dog trials have become a form of sport, as much enjoyed in the uplands as football in the lowlands

After collection the sheep are taken either to the lowland farms for winter quarters or to fairs, there to be sold for fattening or killing In Wales the most important sheep fairs are held during August and September at Welshpool, Newtown and Oswestry

Sheep have brought about the growth of cloth making In the Middle Ages cloth making was carried on up and down the country wherever there were sheep To-day



MIXED FARMING IN EIRE

(Class Picture No 106 in the portfolio)

cloth is manufactured in a few special districts only.

Cattle.—As sheep are suited to the high ground and short pasture, so cattle are suited to the lower slopes and the lowlands where the pasture is longer and more plentiful

Cattle are raised for two purposes—(1) for beef, and (2) for milk For beef, burly animals like the Hereford and Aberdeen Angus are bred, whilst for quality and abundance of milk the leaner Jersey or Holstein-Frisian are chosen The actual method of rearing the cattle may fall under one of three headings —(1) the breeding of cattle to be sent elsewhere for fattening, (2) the fattening of cattle either bred in the district or sent in from elsewhere, and (3) the keeping of dairy cattle.

Cattle breeding is done on upland pastures, where the animals feed from early spring to October and are then brought into yards and paddocks for winter, and fed on straw, corn and roots After two years they are sold to graziers—men who feed cattle for market

In Wales nearly all the cattle kept are for store, that is, for fattening elsewhere, and are sold to graziers in midland and southern counties The upland animals are very hardy, the noted black cattle are natives of N Wales and Anglesea, whilst Herefords predominate in the border counties All breeds,

however, fatten quickly on grass, so that after spending their early lives on poorer Welsh pastures they put on flesh rapidly in the water meadows of the midlands and south, needing to be fattened on roots, grain and cake during the last few weeks only of the fattening time

Ireland, too, is noted for store cattle, which are sent for fattening to the plains of the north-east and the midlands of England Some are fattened in eastern Ireland in the valley of the Lagan or to the west of Dublin

In the midlands, the clay districts lying to the west of the limestone ridge are too heavy for many crops but provide excellent pastures They stretch from Somerset through Gloucester to Rutland, Leicester and Northamptonshire Here cattle fattening is the chief work of farmers Cattle are bred on the spot and large numbers are also brought from Wales and Ireland every spring.

In the eastern counties, which are crop-growing lands, cattle are bought in the autumn, kept in stalls and fed on roots and cake all the winter, and having fattened are sold in the spring

The general movements of store cattle are from north to south and from west to east—from raising to fattening areas. The busiest seasons for the moving of cattle are spring and autumn In spring the cattle go to the summer pastures of the midland grass counties, and in autumn to the crop lands of the east and south-east

Certain towns have become noted cattle markets

In the west—Shrewsbury and Gloucester, Hereford and Oswestry are centres for the collection and sending away of Welsh store cattle to the midlands.

In the midlands—Leicester, Rugby, Northampton and Banbury

In the east—Norwich (Irish cattle), Ipswich and King's Lynn

In the south-east.—Reading (Irish cattle), Salisbury, Dorchester and Chichester

Dairy cattle.—For dairy cattle, juicy grass growing on rich water meadows is necessary to ensure a good flow of milk in summer. In winter, the cattle are stalled and therefore need roots. Crop growing must thus be carried on side by side with dairy farming. The dairy cattle, too, are less hardy than mountain or store cattle and therefore are to be found in the more sheltered districts The best dairying regions are in the lowlands of the west—Clydesdale, Ayrshire, Wigtown, the Cheshire plain, Hereford, Somerset and the central plain of Ireland.

In Great Britain the distribution of milk is under government control and is directed by the Milk Marketing Board Dairy farmers may be licensed to sell milk direct to local customers or to creameries and other centres from which, after being pasteurised, it is distributed to homes and schools, catering establishments and food factories The milk is collected from the farmers and although the regions of dairy farming may be some distance from the busy manufacturing areas rapid transport in hygienic containers by road and rail ensures adequate and fresh supplies Thus (*a*) the Cheshire plain supplies south Lancashire and the midlands, (*b*) Wigtown supplies Newcastle, Birmingham and London, and (*c*) Clydesdale and Ayrshire supply Glasgow and the district round.

The recognition of milk as a food of outstanding value has led to a great increase in the demand and some 160,000 farmers are now engaged in dairying. Waste is avoided by a careful distribution of the creameries, the ready despatch of fresh milk far and wide, and the manufacture of surplus quantities into cheese and butter In Wigtown, for example, a number of creameries stand "along the main lines of transport at Stranraer, Sorbie and Colfin, and in Kirkcudbrightshire at Tarf, Gatehouse and Dalbeattie They are run by the farmers who hold shares in the different companies. A noted one being the Scottish Wholesale Co-operative Society at Glasgow."

In Ireland co-operative marketing has been of great help to dairy farming Each morning the farmer takes his milk to the nearest creamery, where the cream is separated from the milk. The farmer is paid for the cream; the skim milk he takes home for the use of his family and pigs

In dairy farming districts, those with quick transport to market produce fresh milk, and those farther away, such as Cornwall and Ireland, turn the milk into butter, cheese and dried milk products The markets for these goods are the same as those for the fresh milk—the great manufacturing areas of the British Isles

Pigs.—In all dairy districts we find pigs being reared They use up waste products, since they are fed on the skim milk and the whey, and the profit made on their sale adds to the farmer's income

England and Wales have about 2½ million pigs, Ireland 1½ million and Scotland about 140,000. Pigs can be reared under a great variety of climatic conditions, and their distribution in the British Isles is determined mainly by the location of the dairying industry They are omnivorous feeders, can be kept largely on waste and refuse, and can be reared in confined spaces. It is interesting to notice that they were originally animals of forest countries, living largely upon acorns, nuts, roots, grubs and other such nutritious foods. A plentiful supply of autumn food converted into a layer of fat would help to carry a pig through the winter months Thus it should be seen that farms producing grain possess a good fattening food for pigs, and that pig rearing would be a profitable farm industry. The dairying industry is also favourable to pig rearing, since in the manufacture of dairy products there is a considerable surplus of milk unsuited to manufacture or for human consumption. This is usually sent to piggeries, and so we find that in regions where dairy cattle are kept, pigs also are numerous Ireland is noted for its bacon, the damp Central Plain being particularly suitable for dairy farming

In England the Berkshire pig is numerous in the southern and midland counties. It is large and black, with white feet, and is suited for bacon production rather than for pork. The Yorkshire pig is the largest of British breeds. It is white in colour and the sows breed in big litters, as many as eighteen young being common at one time York hams are noted all over the world The Tamworth pig is copper coloured and is also a useful animal for bacon production. The Dorset, Hampshire and Devon breeds are all black, and have been the basis of the bacon and ham production of the south-west of England

TEACHING NOTES

1. Cattle and sheep.—Show the pupils pictures and sketches of the different kinds of sheep and cattle mentioned in the lesson, and encourage them to collect pictures of the various breeds Pictures and stories of sheepdogs will also excite the pupils' interest

The following tables may be useful —

(a)	*Sheep*	*Cattle*
England and Wales	16,200,000	5,900,000
Scotland	7,500,000	1,300,000
Ireland	3,900,000	4,900,000

(in round numbers).

(b) Number per hundred of the population	*Sheep*	*Cattle*
England and Wales	42	15
Scotland	154	25
Ireland	91	124

2. Supplementary foods.—In the main the climate of the British Isles enables cattle and sheep to feed on the natural grass during the whole year. Young animals, however, need more careful attention, and are provided with additional food. Similarly, for fattening purposes supplementary foods are provided. Oil cake (the compressed residue after the extraction of oil from many

seeds), clover, hay and root crops are a few of the foods supplied to both sheep and cattle

3. Dairying and ranching.—The difference between a dairy farm and a ranch should be clearly understood. A dairy farm must be comparatively small, since each animal requires daily attention. It is a centre of great activity and must be in close touch with populated areas. A cattle ranch is of great size with a wide, open, almost undeveloped natural expanse of grass At certain points on the ranch there is much activity, and routes forming a link with the outside world are needed The animals require only occasional attention and very few workers are needed, except at the busy route centres

4. Memory work.—(*a*) The western half of the British Isles is a land of grass and pastoral farming (*b*) The short, fine grass of the hills is suitable for sheep, which thrive on dry pastures (*c*) Beef cattle are reared on the middle slopes where the grass is longer. (*d*) Dairy cattle are reared on the sheltered pastures of the valleys (*e*) The chief sheep-rearing districts of the British Isles are (1) the Southern Uplands of Scotland, (2) the Welsh mountains, (3) the chalk and limestone hills running eastwards and north-eastwards across England from Salisbury plain (*f*) The Welsh mountain sheep and Southdowns are famous for their mutton, the Lincolns, Leicesters and Cheviots are famous for their wool (*g*) Dairy farming is done in Somerset, Hereford, the Cheshire plain, Ayrshire, Clydesdale and the Irish plain (*h*) Pigs, fed on the skim milk and whey, are valuable for their pork, bacon and hams (*i*) Memorise the following—Scottish beef, Welsh mutton, Southdown mutton, Cheshire cheese, Cheddar cheese, Irish bacon, Wiltshire bacon and hams, York hams, Melton Mowbray pork pies, Devonshire cream, Aylesbury milk, Irish butter, Devonshire butter

5. Exercises.—(*a*) Where are the richest grasslands of the British Isles? (*b*) What use is made of them? (*c*) Describe the three different kinds of pastoral farming carried on in the British Isles (*d*) Explain how the relief of the land has led to these differences, (*e*) How does the kind of soil affect the pasture? (*f*) What pastures are suited to (1) sheep, (2) store cattle, (3) dairy cattle? Explain why in each case. (*g*) What crops are grown on a dairy farm? (*h*) What use is made of them? (*i*) Which are the chief sheep-rearing districts of the British Isles? (*j*) Why has Scotland more sheep than cattle? (*k*) Why has Ireland more cattle than sheep? (*l*) Tell all you know about the Welsh mountain sheep (*m*) For what are (1) the Lincolns, (2) the Southdowns noted? (*n*) What is done with sheep during the winter? (*o*) How are the flocks collected? (*p*) Tell of all the uses of sheep (*q*) For what two purposes are cattle reared? (*r*) Name three breeds of British cattle (*s*) Tell all you know about store cattle, and how they are fattened (*t*) Which parts of the British Isles are noted for dairy farming? (*u*) Where are the markets for the dairy produce? (*v*) What dairy produce is sent to these markets?

V. COAL

England in the past.—For many hundreds of years the people of the British Isles were engaged mainly in pastoral farming and crop growing The produce of their labours went largely to feed them, though the export of wool both in its raw state and manufactured into cloth was for many years the chief trade carried on with countries across

the sea. Until the middle of the eighteenth century Britain was an agricultural country, able to satisfy its own needs in the way of grain, and importing only such goods as sugar, tobacco, spices and wines which could not be produced in the country The end of the eighteenth century, however, saw a great change in the life of the people, a change which resulted in England's turning from an agricultural into a manufacturing land. England is no longer an exporter but an importer of wool, as well as of other raw goods, such as cotton, jute and hemp. Its people have greatly increased in number They have moved from the south and east to certain districts in the north and west, and are factory and workshop hands, merchants and traders, shopkeepers and assistants, and transport workers, rather than farmers and farm labourers

England is no longer able to feed itself, but has gradually increased its imports until to-day four-fifths of the wheat consumed is sent to England from other countries

To what are these changes due? The answer lies in two words—*coal* and *iron* The discovery that coal could be used to produce power was the thing that brought about the changes Britain is richly supplied with coal of good quality, easily worked, and in places that can be readily reached Iron was needed as well as coal, for the new power was so great that wood was no longer strong enough for the machines, and they had to be made of iron Britain also contains great supplies of iron of different qualities

Besides its wealth of coal, iron and other minerals which came to be used in the factories, Britain was aided by three things to become the greatest manufacturing country and the principal shopkeeper of the world.

1 Britain was first in the field—the one to build its factories and gain markets before other countries

2 The climate of the British Isles was such that the people could always work in it It was neither too hot nor too cold, and was changeable enough to keep the people healthy

3 Britain's position was the best in the world—its own ports were easily reached and always open, and other parts of the world could be readily reached also. (Compare the ports of the Baltic Ocean and the St Lawrence river, which are frozen in winter)

The story of coal.—What is coal, which has meant so much to Britain? Where is it found and how is it obtained? These are questions that must be answered before studying in further detail the influence of coal and iron on the life of the people of the British Isles

Coal is a product of the climate and plant life found in Britain in the past We have seen that the climate of the British Isles to-day is warm and temperate, the summers not too hot and not too cold It is a moist climate, rain falls at all seasons, but not too heavily except upon the highlands of the north and west Such a climate is suited to the growth of oak and beech forests and of grass

The climate of the British Isles, however, has not always been the same as it is to-day There have been great differences. From time to time the main part of the islands has been covered with a sheet of ice. Then plant and animal life was impossible Some millions of years ago, however, Britain had a very hot, wet climate, and then the plant life was abundant, even richer and denser, it is thought, than are the vast forests found at the equator to-day. The trees of those early forests were different Plant life, like animal life, has gradually changed through the ages The trees of the coal age were largely ferns, horsetails and mosses, many of which grew to enormous heights. "Picture the forests of those pre-historic days They stood amid the marshes and the swamps The forests steamed with hot moisture and grew with rapid strides like a gourd in the night, and after lasting their appointed

time, passed away into the ground to become fossilised, or turned into stone."

The changes caused by fossilising have made coal out of the trees They did not rot away, but became a sodden mass out of which fresh plants grew From time to time the surface of the land changed its level Areas of forest were covered by the sea The forests were killed, and upon them sand and mud collected After a time the area would again be uplifted and raised above the level of the water Forests grew up once more and fresh layers of old plants were heaped up. The land would sink again; the second forest would disappear under the sea and in its turn be covered with a layer of mud These changes went on for countless ages The old forests, or rather the plants that once formed them, were, through the heavy weight of sand and mud upon them, squeezed and squeezed until they formed thin bands of very hard rock—the seams of coal as we know them to-day. The layers of sand and mud between were also squeezed and hardened, forming the sandstones and shales of the coal areas

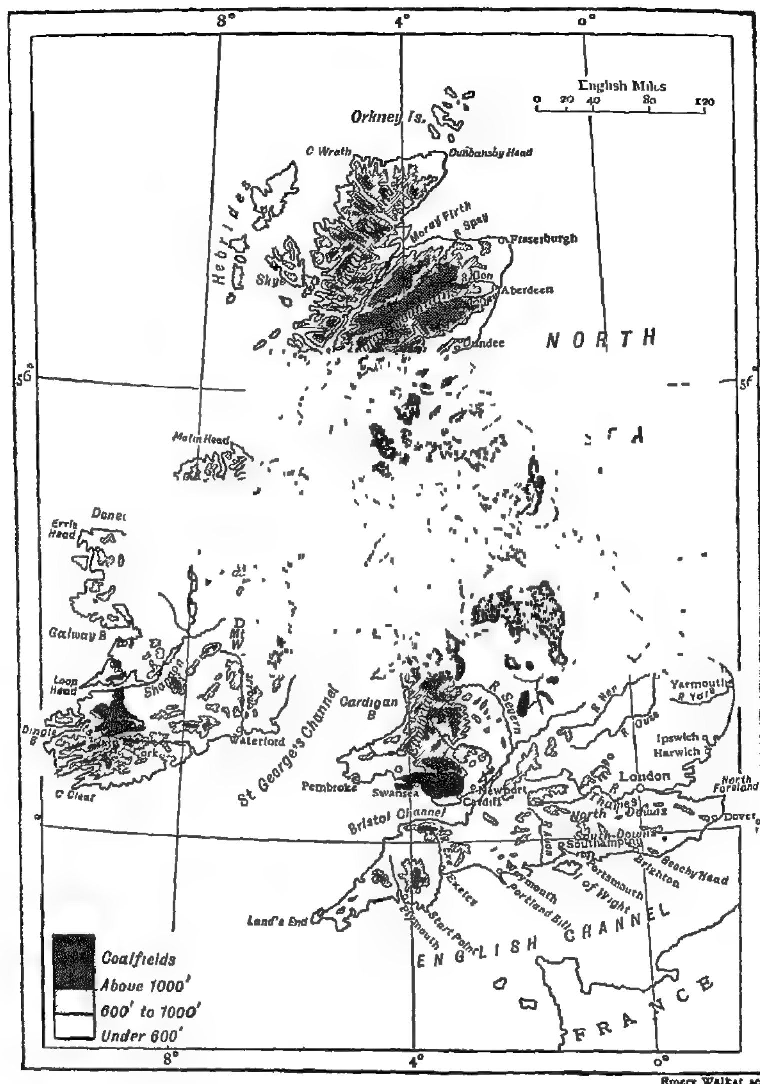
The coal of the British Isles is a product of many millions of years ago, formed under a climate very different from the one that exists in the islands to-day. Coal is found in seams which vary in thickness from a few inches to thirty feet, the seams being separated from one another by beds of sandstone and shale

Coal mining.—How has the coal, deeply buried beneath layers of rock, come to the surface, to be found and used by man?

In the centuries that have passed since the making of the coal seams, earth movements have taken place Great folds have bent the rocks upwards. The tops of the folds have been weathered away; the rocks covering the coal layers have also been weathered away, even the coal layers themselves have been worn down in the Pennines, and their edges stand bare on the hillsides Man found that this black rock would burn, and in burning gave out heat We have proof that the Romans used some of our coal for smelting iron, but it was not until the nineteenth century that coal came to be used generally

It was from bare rocks on the hillsides or along the cliffs on the shores that man first obtained coal, but not until he went below ground did he find it in large quantities and of a good quality. Almost all the coal used to-day is taken from mines often hundreds of feet below the surface of the ground To get at the coal, shafts have to be sunk—shafts big enough to permit the passage up and down of "cages" in which the men and boys who are going to get the coal can travel, and also big enough to haul the wagons full of coal up to the surface. The sinking of a shaft is an expensive undertaking, and is done only when it is certain that there are coal seams deep and good enough to be worth the expense So before the shaft is sunk, the mine owner calls to his aid the geologist, who knows all about the rocks of which the earth is made, to say whether coal is likely to be found at that particular spot If he says it is, then engineers are asked to sink bores to test the geologist's statement, and moreover to give particulars of the quality, thickness and number of seams within working distance Many bores are sunk before the shaft is begun, and it is upon the result of the borings that it is decided whether the shaft shall be sunk or not. According to the kind of rock through which the shaft passes, it is found necessary or not to brick up the walls Running out at right angles from the shaft, a number of passages 12 or 15 feet broad are made at different depths, and along these the coal seams are gradually cut out.

The coal, once hewn with picks, is now mainly cut with pneumatic drills and machines driven by electricity or by compressed air, the roof being propped up from time to time by skilled "repairers" to prevent its tumbling down The hewn coal is thrown on a moving belt and carried to trams which are drawn, either by ponies or electric motors, to the bottom of the shaft, where it is hauled to the surface



THE BRITISH ISLES—PHYSICAL MAP SHOWING CHIEF COALFIELDS

by steam-driven machinery At the surface the coal is cleaned, graded and sometimes washed

The mining of the coal is hard and dangerous work. The miner has to face many difficulties, though these have been greatly lessened by the help of clever inventions. Modern mines are now well ventilated, so that there is always a current of air to remove the harmful gases that are given out from the coal. Flooding was another difficulty Modern pumps can now keep the mines clear The Davy lamp warns the miner of fire-damp, thus giving him the chance to escape before an explosion takes place Special methods of propping prevent the falling in of roofs

The work itself is hard Many of the seams are shallow, forcing the miner to work in a stooping position or even lying on his side. Upon the miner, however, manufacturing Britain depends, for the wealth of our great factories is founded on coal

Coalfields of the British Isles.—Coal cannot be brought to the surface in all parts of the British Isles. The forests grew only in the districts which were dry land during the coal age Coal can also be obtained only down to a certain depth, beyond which at present it is too costly to mine, and the engineering difficulties are too great to overcome The areas in the British Isles where coal is mined are called *coalfields* A coalfield is a place where the surface of the ground is made up of rocks containing workable seams of coal The rocks in which the layers of coal are found are called *coal measures* The actual coal seams form only a small portion of the thickness of the coal measures

Not all the seams in the measures are worth working Seams less than a foot in depth are not mined, excepting when they stand out bare on a hillside The usual thickness of seams worked in England is from 3 feet to 6 feet In the South Staffordshire coalfield the seam is 30 feet thick.

The main coalfields of the British Isles lie to the north and west, chiefly along the sides of the older uplands. An important point to note with regard to their general position is that the fields are either on the coast or near it. This is very useful in making easier the export of coal and the import of raw goods to the manufacturing areas that have grown up on the coalfields.

The coalfields of the British Isles may be grouped thus:—

I. Scotland. The coalfields of Scotland lie in the central valley between the Southern Uplands and the Highlands They may be divided into three fields.—

(*a*) West—Ayrshire coalfield.
(*b*) Centre—central, or Lanarkshire coalfield
(*c*) East—Forth, or Fife—Midlothian coalfield

II. England and Wales.

1 *The Pennine group*, at the east and west sides of the uplands.—

(*a*) Northumberland and Durham coalfield
(*b*) Cumberland coalfield.
(*c*) Yorkshire, Derbyshire and Nottinghamshire coalfield
(*d*) South Lancashire coalfield
(*e*) North Staffordshire coalfield.

2. *The Midlands and Welsh Marches* —

(*a*) South Staffordshire coalfield
(*b*) Leicester coalfield.
(*c*) The Severn coalfield
(*d*) North Wales coalfield.

3 *South Wales and the Bristol Channel*:—

(*a*) Pembroke coalfield
(*b*) South Wales coalfield
(*c*) Forest of Dean coalfield.
(*d*) Bristol coalfield
(*e*) Somerset coalfield

4. *South-east England*.—

(*a*) Kent coalfield

III. Ireland.

1. *Northern Ireland*.—

(*a*) The coalfield of county Tyrone and the south-west end of Lough Neagh

2. *Eire* —

(*a*) Leinster coalfield (Leix, Kilkenny, Tipperary)
(*b*) Munster coalfield (Kerry, Limerick, Cork).

Uses of coal.—The coal mined in the British Isles is not all of the same kind.

1. Anthracite, or stone coal, is a hard stonelike coal which does not blacken the

fingers. It is smokeless, and leaves little ash, but does not burn so readily as the other kinds

2 Bituminous, or ordinary coal, burns freely and is in general use for household fires and manufacturing purposes.

3 Mixed kinds, or partly anthracite and partly bituminous coals, are called in general *steam coal*, and this is largely used for steamships.

Britain is well provided with all these kinds of coal

What is done with the 250 million tons of coal mined every year in this country? About one-fifth of it is sent to foreign countries. The rest is used for ships, railways, general manufactures, gas works, electricity generating stations and domestic purposes

There are two main ways in which coal can be used It can be (1) burned directly to produce heat, and (2) heated, as at gas works and power stations, so as to obtain from it other products used in factories

The burning of coal—Coal is burned directly for household purposes and in factories. In the past, when England was well supplied with forests, wood was used for fuel After a while the supply of wood ran short, and coal took its place. The making of canals and railways, and the improvement of roads, made it possible for every household to obtain cheap coal In factories, coal is burned to produce the steam which sets the great machines in motion.

Products obtained from coal.

(*a*) *Gas*. Coal of the right kind is heated in large air-tight containers, and the coal gas given off is collected. This is the gas used in many houses for cooking and lighting Other by-products are tar, dyes, motor spirit, drugs, plastics, fertilisers and explosives.

(*b*) *Coke* When the coal gas, tar and ammonia in coal have been driven out by a special method of heating, coke is left Coke is burned in the great furnaces of iron and steel works

(*c*) *Smokeless fuel* This is partly coal and partly coke Some of the gas has been taken out of the coal. This smokeless fuel will burn readily, and is often used instead of coal for burning in stoves and grates

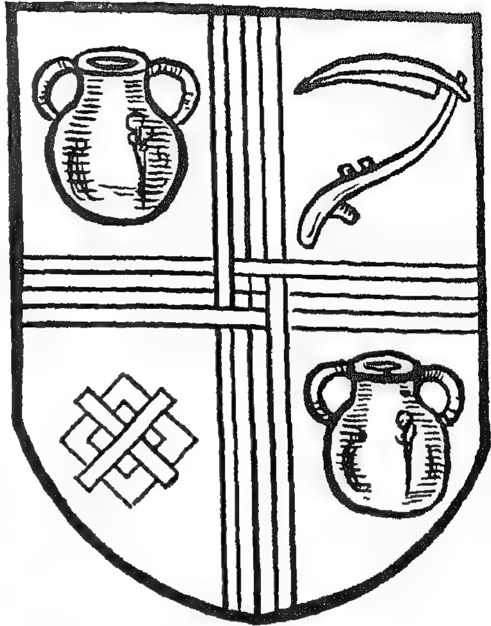
The export of coal to foreign countries is of very great importance to Britain The millions of tons of coal sent away have a three-fold value, for they (1) bring money into the country, (2) provide our shipping and that of other countries with a return cargo, and (3) give employment to a great number of men.

Coal exports.—The great buyers of British coal are those countries which either have none of their own or cannot produce enough for their needs France is the best customer, then Italy and Germany, and afterwards the Argentine, Eire, Spain, the Netherlands, Belgium and Egypt

The British ports from which coal is sent away can be arranged in six groups, in order of the amounts that they export —

1 The chief exporting district is that of the Bristol Channel, the coal sent away being mined almost entirely in the South Wales coalfield It is sent to nearly every part of the world The lead of the South Wales coalfield is due to (*a*) its good position for shipping coal to all excepting North Sea countries, (*b*) the many kinds of good coal sent away, and (*c*) the position of some of its ports, such as Swansea and Neath, actually on the coalfield, others being not more than six or ten miles away, with a downhill run to them through valleys The chief ports are Llanelly, Swansea, Neath, Briton Ferry, Port Talbot, Barry, Penarth, Cardiff and Newport A small amount finds outlet through Bristol and Avonmouth. The ports are well provided with hoists and cranes for the rapid filling of vessels. Coal vessels holding over 4,000 tons can be loaded in six hours, that is to say at the rate of 650 to 670 tons in an hour.









Public Arms

City of Oxford (an ox passing over a ford)
Wallsend (an eagle on an embattled wall)
Burslem (two porcelain vases, a scythe and a fret)
Cardiff (a dragon supporting in front of a leek a flag-staff with banner)

2 The second exporting region is the Northumberland and Durham coalfield The ports lie between the Coquet river and the river Tees, and include Amble, Blyth, North and South Shields, Newcastle, Sunderland, Seaham and Hartlepool This region is second to-day, but its export history is the oldest. Newcastle probably sent coal to London as early as the thirteenth century. In London, coal was spoken of as "sea-coal" because it came by sea The coal still comes to the Thames by sea, but also goes to North Sea, Baltic and Mediterranean ports as well. For the North Sea trade, the coalfield is well placed. Some of the towns such as Amble, Blyth and Seaham have grown up entirely as coal ports

3. The third exporting district is that of eastern Scotland, to which coal is also sent from the Forth and Lanark fields. The coal ports are Leith, Granton, Bo'ness, Grangemouth and Burntisland, and most of the coal is sent to the North Sea ports.

4 The ports of the fourth region are Hull, Goole and Grimsby. All of them are properly fitted out for coal shipment, but because they do not stand on the coalfield, the railway transport adds to the cost of the coal

5. In the fifth district, western Scotland, the ports are Ayr, Troon, Ardrossan, Greenock and Glasgow.

6. The sixth region is the North Wales, Lancashire and Cumberland coalfield. Its ports are Runcorn, Manchester, Liverpool, Preston, Fleetwood, Whitehaven, Workington and Maryport.

TEACHING NOTES

1. Illustrations.—Maps of the coalfields of the British Isles should be shown to the pupils during this lesson, and the position of the coal ports with regard to their markets pointed out. Pictures of mines and of miners at work add reality to the description, and pieces of anthracite, bituminous coal, steam coal, smokeless fuel and coke might be seen and handled There is a Class Picture, No. 70 in the portfolio, of a Coal Mine in the United Kingdom, and further illustrations in Vol I, pages 428 and 430

2. Comparative annual production of coal in the British Isles in a normal year.—

Total		258,000,000 tons
Yorkshire, Derbyshire and Nottinghamshire field		76,200,000 tons
Northumberland and Durham field		53,500,000 tons
South Wales and Monmouth field		48,100,000 tons.
Scotland		34,200,000 tons
Central field	16 million tons.	
Forth field	13 million tons.	
Ayr field	4½ million tons	
Lancashire and Cheshire field		15,700,000 tons.

3. World supply of coal.—Britain stands second among the great coal producers of the world, the four leading countries being U S A., United Kingdom, U S S R, Germany. Poland and France also rank very highly, and of the countries of more recent industrial development, Canada, Australia and S Africa possess vast untapped resources in addition to the rich coal mines already being worked

4. Modern power.—In the British Isles to-day, power for the industries and for transport is supplied by coal Although we are rapidly passing out of the "steam age," and other forms of power, especially electricity, are used to a great extent, man is dependent upon supplies of coal to a remarkable degree. Electric traction, lighting and heating are common in all towns, and electric energy has largely supplanted steam in industry, but in our country electricity is generated by the use of supplies of coal The gas engine is used to a minor degree and gas lighting and heating are common, but again coal is essential for gas production. In the British Isles water power for the generation of electricity is little developed except in Eire and Scotland

5. Transport.—Supplies of coal are taken by *tramp steamers* to the points which have

been established at the most convenient places for ships to call to replenish their supplies, and they return with whatever cargoes they can obtain

6. Memory work.—(*a*) Until the eighteenth century Britain was an agricultural and pastoral country, and grew wheat enough for its own needs (*b*) Britain is now a manufacturing country, and imports food and raw materials. (*c*) The British people are chiefly factory workers, merchants, shopkeepers and transport workers. (*d*) Steam engines which drive machinery are worked mainly by the use of coal fuel (*e*) Great forests buried beneath sand and mud under the sea have become fossilised or turned to coal (*f*) Britain has rich coalfields often placed near the sea, and containing many kinds of coal (*g*) The steam coal of South Wales is exported to the coaling stations of the world (*h*) Most of the coalfields have become large manufacturing districts.

7. Exercises.—(*a*) What changes took place in the life of the people of England during the eighteenth and nineteenth centuries? (*b*) What are the chief uses of coal? (*c*) How did Britain become the greatest manufacturing country in the world? (*d*) How is coal obtained? (*e*) Describe the making of a coal mine (*f*) How has work been made safer for the miner? (*g*) What is the best position for a coalfield? Why? (*h*) Draw a sketch to show where the coalfields of the British Isles lie. (*i*) What kinds of coal are found in the British Isles? (*j*) What products are obtained from coal? (*k*) Why is the export of coal important? (*l*) Explain why the South Wales coalfield has the largest export trade (*m*) Which coalfield sends coal to London?

VI. IRON

Old method of smelting iron.—Iron was known and used in Britain before the coming of the Romans The peoples of the Iron Age made their weapons and tools of iron Down to the eighteenth century, however, though the use of iron was widespread, it was not produced in great quantities Such things as cannon, horseshoes, bolts and bars, ploughshares and fire-backs were made of iron The nineteenth century saw a great growth in the number of uses to which iron was put. There was also a change in the iron-producing districts of the country, as new methods gave rise to new needs in the industry.

Iron is found as an ore, that is to say in an impure state, the metal being mixed with other material which has to be removed before the iron can be used for manufacturing purposes.

There are three main sources of supply from which iron ore is obtained in Britain.

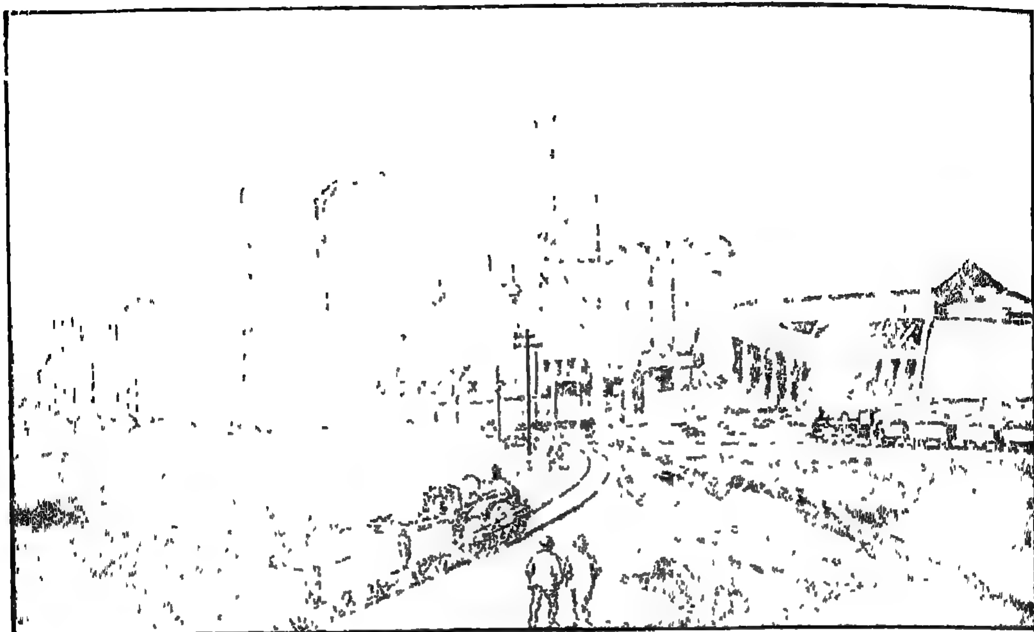
1. Differently shaped pockets of red iron ore are found in the limestone rocks of the Lake District

2. Amongst the rocks of the coal measures small round lumps and bands of iron ore called blackband or ironstone are found

3. Beds and layers of brown iron ore are worked in rocks made of lias, which consists of layers of clays, sands and limestones

Thus supplies of iron ore are obtained up and down the country, in the Lake District, in the coalfields, along a line drawn from the Cotswolds to the north of Yorkshire, and in the Wealden district of south-east England

These supplies have not been worked all together, at one time certain kinds of ore were needed, and at another time the demand was for other kinds. For the iron industry to be carried on in any district three things are required—(1) iron ore, (2) supplies of fuel, and (3) a flux The fuel used in the



VIEW OF AN IRONWORKS WITH BLAST FURNACES [Fox Photos

past was charcoal or burnt wood, to-day it is coal or coke. The flux needed is lime, which mixes with the impurities that come away from the iron when the ore is smelted

Until the eighteenth century charcoal was the fuel used in the smelting of the ore, so the wood supplies of the country fixed the areas where the ore was worked In Tudor times, four hundred years ago, the Wealden or forest areas of Kent, Surrey, Sussex and east Hampshire were the chief iron-smelting regions in the British Isles The iron industry in the Weald was favoured by (1) the supplies of ore in the chalk rocks, (2) the stores of timber in the forests around, (3) water power from the streams, and (4) the nearness of the chief market—the London district

So long as wood was used for fuel, however, no ironworks were lasting, and quite often they had a short life only The smelting used up vast quantities of charcoal. It has been found that one-third of an acre of woodland was cut down to produce one ton of iron. So the forests were rapidly eaten up, and as no provision for the future was made by planting more trees, the iron industry was forced to move from one place to another Thus in the seventeenth century we find the Wealden area not producing half of the amount that it did in the century before, and by far the greatest supply of iron was coming from Worcestershire, Shropshire, Staffordshire, Gloucestershire and Herefordshire Other ironworking regions were in south Yorkshire, Durham, and the Furness district of north Lancashire

As the manufacture of iron increased, another power had come to play an important part in the choice of the districts where the furnaces were set up. At first the ovens were quite small, and were built in windy places—many of them on hilltops—where there was a good current of air to enter the furnace and blow the charcoal bright and hot An advance was made when bellows worked by man were invented At length running water was used to turn a wheel which worked the bellows Then the furnaces and the forges were built wherever there was a quickly moving stream, and the

use of water power made it possible to build larger furnaces.

A notable discovery.—The iron industry used up such vast quantities of wood that the Government was forced to make the felling of more than a certain number of trees in a district unlawful Thus the wood supplies ran short, and in the seventeenth century the industry began to fail. The lack of wood, however, led man to try the use of coal instead of charcoal in the furnaces Many attempts were made, but it was not until the middle of the eighteenth century that coal came to be generally used. A Shropshire iron manufacturer named Abraham Darby first smelted iron ore by means of coke in his works at Coalbrookdale, probably about the year 1710 This discovery saved Britain's iron trade which had been steadily going down since the middle of the seventeenth century From the middle of the eighteenth century the industry went rapidly ahead, but the ironworks rose in new places The materials now needed in the works were ore, coal and a flux To save expense in manufacture all these things had to be at hand, for all are heavy and thus costly to transport The new fuel areas—the coalfields—also contained iron ore. The ore could often be worked from the same mine as the coal, and the ores from the coal measures were chiefly used during the next hundred years They reached their highest production in 1850, and since then have gradually gone down. The reason is that the coal measure ores are usually costly to work, and it was found cheaper, with better transport, to use easily worked and thus less costly ores, even if they had to be brought a long distance. The coal measure ores are still mined, however, in South Wales, Staffordshire, Shropshire and Scotland

Since 1850 fresh supplies of ore have been worked.

1 *The red ores of the Lake District.* These reached their greatest output at the end of the nineteenth century. They are high grade ores, and their use has gone down because the supplies most easily reached have now all been worked

2 *The brown ores in the belt of lias stretching across England from Gloucestershire to Cleveland in Yorkshire* The Cleveland district was the first to rise to great importance, and its success was marked by the rapid growth of Middlesbrough; but here again the most easily worked ores have been used, and the district is going down in importance. The busiest regions now are in Lincolnshire, Leicestershire and Northamptonshire, and there are important ironworks at Scunthorpe, Corby, Islip, Wellingborough and Kettering

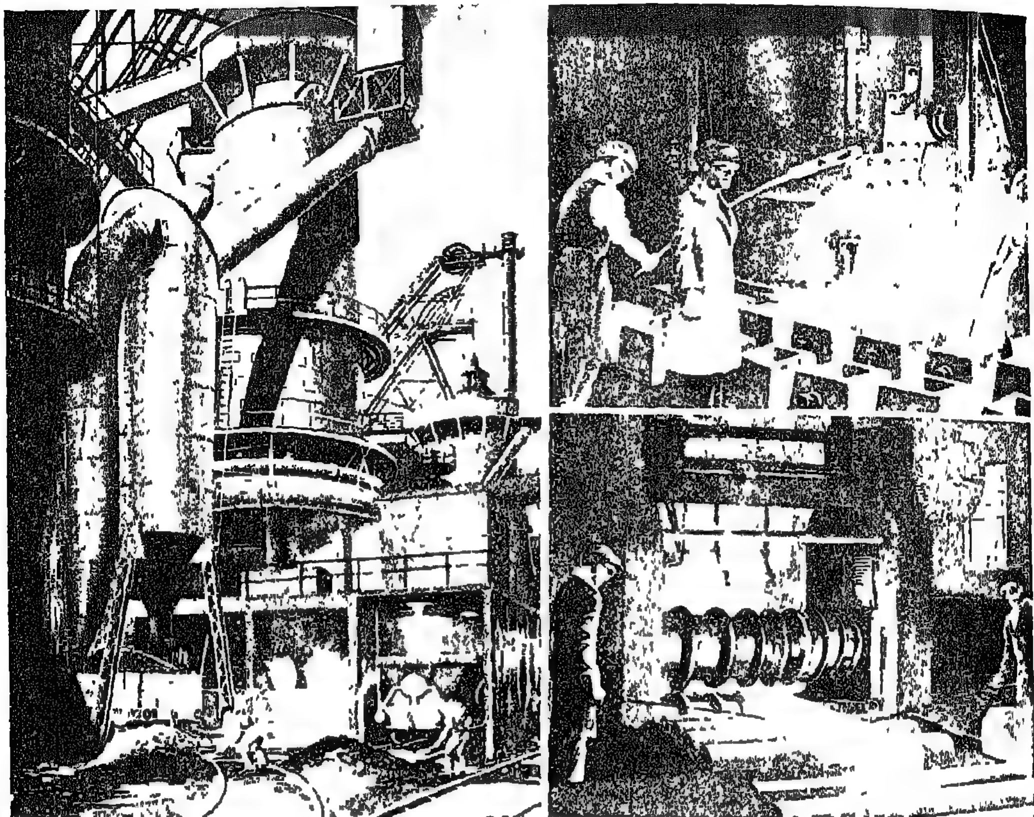
3 *High grade ores from foreign countries.* Since Britain is not producing enough for its own needs, iron ore is now imported from Sweden, Norway and Spain.

Iron ore is still smelted on the coalfields, even though the coal measure ores are not now worked, but a large amount of ore is also smelted away from the coalfields. In early days it was thought to be cheaper to carry the ore to the coal, but now manufacturers prefer to move the coal or coke to the ore—to the Cleveland district, to North Lancashire, to Lincolnshire, Leicestershire and Northamptonshire These regions together produce half the pig iron of Great Britain The imported ores are very largely smelted in coastal districts, particularly in South Wales

To sum up, there have been three stages in the iron industry —

1. Until the middle of the eighteenth century the ironworks were placed wherever there were supplies of ore and charcoal

2 From 1730 to the twentieth century smelting was carried on where ore and coal or coke could be found This was on the coalfields, and the ores used were first taken from the coal measures and later sent from other regions.



SHEFFIELD STEEL

Left SMELTING IRON *Right* MAKING AND ROLLING STEEL INGOTS

(Class Picture No 107 in the portfolio)

3 To-day the iron industry is carried on where there are new supplies of ore, and in coastal districts, the coal being brought to the iron

Iron goods.—In the manufacture of iron goods the iron passes through many different stages of treatment It has first to be separated from the ore, for it is not found in a pure state, but has other materials mixed with it The metal is obtained by mixing the ore with coal or coke and limestone. These three materials are packed into a blast furnace and put through great heat.

This furnace is a cylindrical tower about 70 feet high, built of firebrick and cased with sheet iron It usually tapers towards the top and bottom. Near the base are two holes, the lower one to run off the molten metal and the higher for removing the slag. A blast of air is driven through the mass in the furnace in order to produce a very high temperature. The furnace is kept full by the continual addition of fuel, ore and limestone from galleries at the top. The molten metal is run into shaped receptacles, called *pigs*, and the amount of iron in each casting usually weighs about one hundredweight. The iron thus produced is hard, brittle and fairly easily melted.

At first, cast iron and wrought iron were the main products The old methods of

making steel were too costly for much to be done. Cast iron breaks easily and cannot be used for purposes where a tough material is needed Wrought iron is tough, but the labour of making it is heavy and rather costly Inventors in the nineteenth century found a way of producing steel on a large scale at not too great a cost, and steel has been proved capable of taking the place of wrought iron. Thus there is now ten times as much steel as wrought iron made.

In the making of steel the pig iron is placed in a steel furnace where impurities such as sulphur are burned away The new treatment gave rise to a much larger output, because ores can now be worked that were thought unfit before, coal supplies are sparingly used, and different qualities of steel suited to many different purposes are produced One of the newest methods is the use of electric furnaces, but these are not at present found widely in Britain.

The uses of iron are countless, and according to the purpose for which it is needed the finished article is made either of cast iron, wrought iron or steel. To-day more and more goods are made of steel, and less and less of cast and wrought iron.

The iron products may be divided into three groups

1 Goods to which very little remains to be done after the metal has left the steel furnace, forge or foundry They are mainly castings or mouldings, such as cast iron pipes, frameworks for machinery, steel girders or supports for buildings and bridges, steel plates, wrought iron plates and cast or wrought iron hollow ware such as stoves, ranges, fire grates and baths. In many towns is a foundry which produces from the pig iron the refined cast iron used for goods such as these. Special districts for this kind of ironwork are —

(*a*) Derbyshire, Staffordshire, Worcestershire and Warwickshire, which produce large quantities of tubes, baths, tanks and other hollow ware.

(*b*) Derbyshire, Nottinghamshire, West Yorkshire, Lancashire and Staffordshire, which produce stoves, fire grates and ranges of all kinds.

(*c*) South Wales and Monmouthshire, where sheets for tinplate are made.

(*d*) South Wales, North Wales and Monmouthshire, which make sheets for galvanising or covering with zinc

2 Goods which need to be partly manufactured after the metal has left the furnace. These are mainly chains, wire, wire netting, wire rope, wire mattresses, bolts, nails and screws The making of such goods is not so widespread as the making of the products in the first group They are manufactured in the following districts:—

(*a*) West Yorkshire, South Lancashire, Derbyshire and Nottinghamshire, where wire, wire rope and wire netting are made.

(*b*) South Staffordshire and Worcestershire, which produce chains and anchors, nails, tacks, iron bedsteads and mattresses.

(*c*) West Yorkshire, Staffordshire, Warwickshire and Worcestershire, where bolts, nails, nuts and screws are made.

3 Goods produced in special factories which are found only in certain areas. Such goods are tools, machines and engines.

(*a*) Engineering is done in many parts of the country, but busy areas engaged very largely in this work are Lancashire, West Yorkshire, Northumberland and Durham, the Clyde district and central Scotland, the Black Country, South Wales and Greater London.

(*b*) Cutlery and small tool manufactures are carried on in Sheffield and the district around

(*c*) Farming machines are made in scattered towns in the eastern counties.

Cutlery.—A special product of the iron and steel trade is the cutlery of Sheffield and the district around This region has long been famous for its steel trade, which was carried on before England became a manufacturing country. The advantages of

the region for cutlery making were greater in the past than at the present day Five streams, including the river Don, run together at Sheffield. In the valleys of these streams iron ore was found The valleys were covered with forests which provided the fuel used in smelting The streams themselves provided power for the blast furnaces, for the hammers, and for the grinding mills. The millstone grit of the neighbourhood formed good grindstones. When coal took the place of charcoal in the industry, the Sheffield district had the further advantage that it was on a coalfield. Its own supplies of ore are now no longer used. Ore is obtained from Cleveland, Lincolnshire and Sweden The Sheffield district makes not only edged tools of all kinds but also parts of high speed engines that need special steels to stand great heat and stresses The methods of the making of special steels have been found out through the careful study and experiments of clever men called scientists, and the district of Sheffield is now famous as the centre of the science of *ferro-metallurgy* (the working of iron) Sheffield has grown to be a larger town than Leeds.

The Black Country.—The greatest number of different products manufactured within a certain area is found in the midlands or the *Black Country* This district is known the world over for the many kinds and the excellence of its metal ware It is the home of the hardware or ironmongery trade, and anything from a pin to a railway carriage is made The chief manufacture is of the smaller goods, however, because the district is rather far distant from the sea Here articles made elsewhere, many of Sheffield steel, are finished off. "The whole district is one great workshop, both above ground and below All night it is lit up with the flame of iron furnaces; by day it appears one vast, loosely knit town of humble homes amid cinder heaps and fields stripped of their green by smoke and fumes" The centre of the Black Country is Birmingham, with over a million inhabitants It lies just beyond the south-eastern border of the coalfield and makes small goods such as pins, screws, jewellery and bicycles All around it are smaller industrial towns for which Birmingham is the market. Many routes lead to Birmingham, making it the centre for all Warwickshire, Worcestershire, South Staffordshire and mid-Shropshire. The remaining towns specialise—nails at Dudley, keys and japanned goods at Wolverhampton, brass goods at West Bromwich, needles at Redditch, motor cars at Coventry—although scores of factories dealing with fittings for wireless and other electrical installations, plastics, motors, etc, show the advance of modern products

The growth of railways has given rise to another branch of the iron and steel industry —engineering—the making of steel rails, engines and coaches We find that certain towns have taken up the special production of these goods. The towns are not always on the coalfields but are on the main railways, and among them are Swindon, Crewe, Derby, Glasgow and Ashford

Machinery for cotton mills is made in Lancashire, and machinery for woollen mills in west Yorkshire, as these are the districts in which cotton and woollen manufacturing is carried on.

TEACHING NOTES

1. Cast and wrought iron.—Pig iron can be made liquid by heat and cast into any required shape. For this operation a number of workers are employed. The draughtsman prepares the scale drawing of the article that is required Next the pattern maker, a highly skilled wood worker, makes a wooden model of the article in two halves. The moulder then uses these models to prepare the sand trays into which the molten metal is to be run A tray is prepared for each half, and the two halves when fitted together contain the cavity which is the exact shape of the metal that is wanted. Finally those

who have prepared the molten metal finish the work

Wrought iron is prepared from the "pigs" by what is called the puddling process The impurities are burnt out and the very hot metal is frequently hammered or rolled into any required form The wrought iron thus obtained is not brittle and has a greater variety of uses than the iron which is cast from the liquid Iron plates, rails and other shaped materials are produced by squeezing the plastic metal between prepared rollers, in what are called rolling mills

(If possible, show the pupils samples of iron ore, cast iron, wrought iron and steel)

2. Steel.—Steel is the hardest variety of iron manufactured The great hardness is obtained by reducing the percentage of carbon in the metal The smaller the amount of carbon the less brittle and harder does the metal become The word "steel" now means not only a variety of metal made from iron ore but also iron of excellent quality

Special iron ores only are adapted to steel manufacture. The presence of phosphorus or sulphur in the ore largely determines the process to be adopted Special varieties of steel are made with the addition of manganese, nickel, chromium or tungsten Manganese steel is extremely hard and is used for rock-crushing machinery, safes, the rims of railway wheels and tramway cross lines Nickel steel is also very hard and is used for making the armour plates of warships and for the propeller shafts of steamships Chrome steel, again, is exceedingly hard, and is used for safes, armour-piercing shells and rustless cutlery Tungsten steel keeps hard even when very hot, and is used for metal-cutting tools

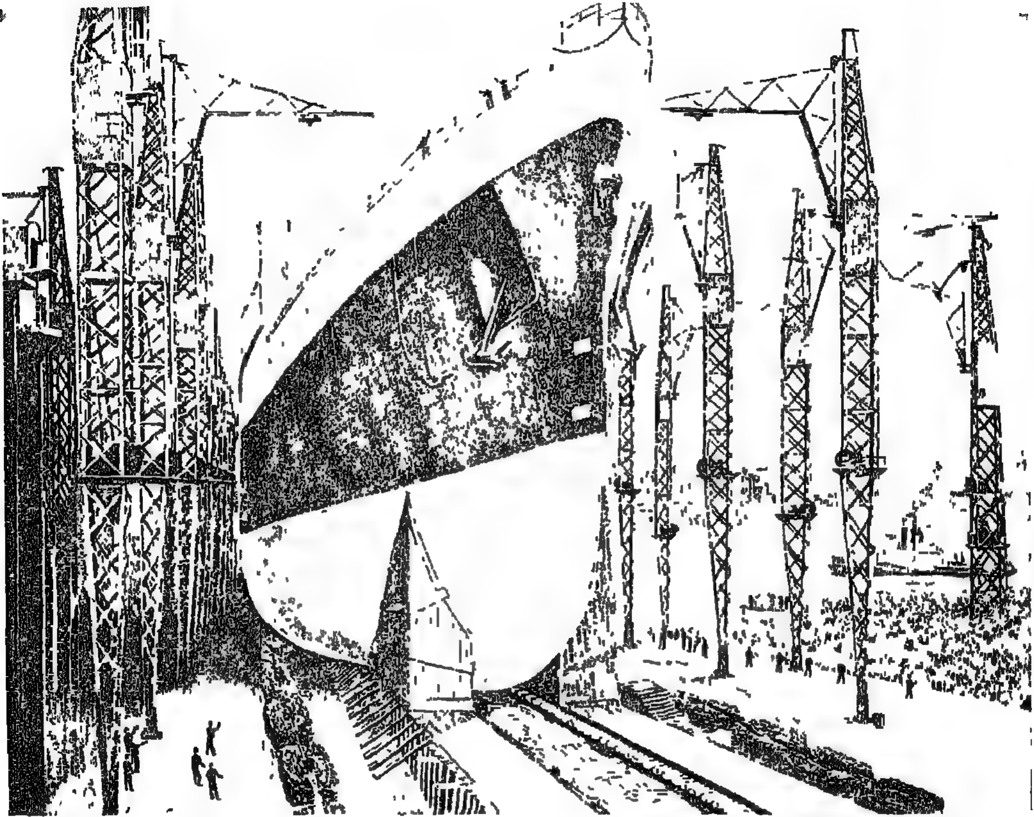
3. Flux.—A flux is a substance which is mixed with a metal or some other material to promote fusion. Thus rosin is used for soldered joints for electrical purposes Borax is used for silver soldering. Sand is sometimes employed in the welding of iron or steel Limestone, as a lining for blast furnaces, simplifies the smelting of ore

4. Memory work.—(*a*) There have been three stages in the iron industry: (1) The first ironworks stood wherever there were supplies of iron ore and charcoal (2) From about 1800 onwards, ironworks were built on the coalfields, where iron ore and coal or coke could be found. (3) The iron trade to-day is carried on where there are new supplies of ore, and also in coastal districts, the coal being brought to the iron (*b*) Pig iron is obtained by smelting iron ore. (*c*) The chief kinds of iron are cast iron, wrought iron and steel. (*d*) Special branches of the iron trade are engineering, shipbuilding, the making of farming machines and cutlery.

5. Exercises.—(*a*) How is iron found? (*b*) Why must it be smelted? (*c*) How is iron smelted? (*d*) Where is the Lake District? (*e*) Where is the Weald? (*f*) Explain why there was once a great iron industry in the south-east of England. (*g*) Why did this iron industry lose its importance? (*h*) How was the British iron industry saved from ruin? (*i*) From what countries is iron ore imported? (*j*) Name three kinds of iron and tell all you know about each kind. (*k*) Name some counties of England that are noted for iron manufacture. (*l*) What is tinplate? (*m*) Where is tinplate made? (*n*) Where are farming machines made? (*o*) How did Sheffield become famous for cutlery? (*p*) Where is the *Black Country*? (*q*) Why is the *Black Country* so called? (*r*) Where are railway engines made?



VII. SHIPBUILDING—POTTERIES



LAUNCHING A LINER AT A CLYDE SHIPYARD

(Class Picture No 108 in the portfolio)

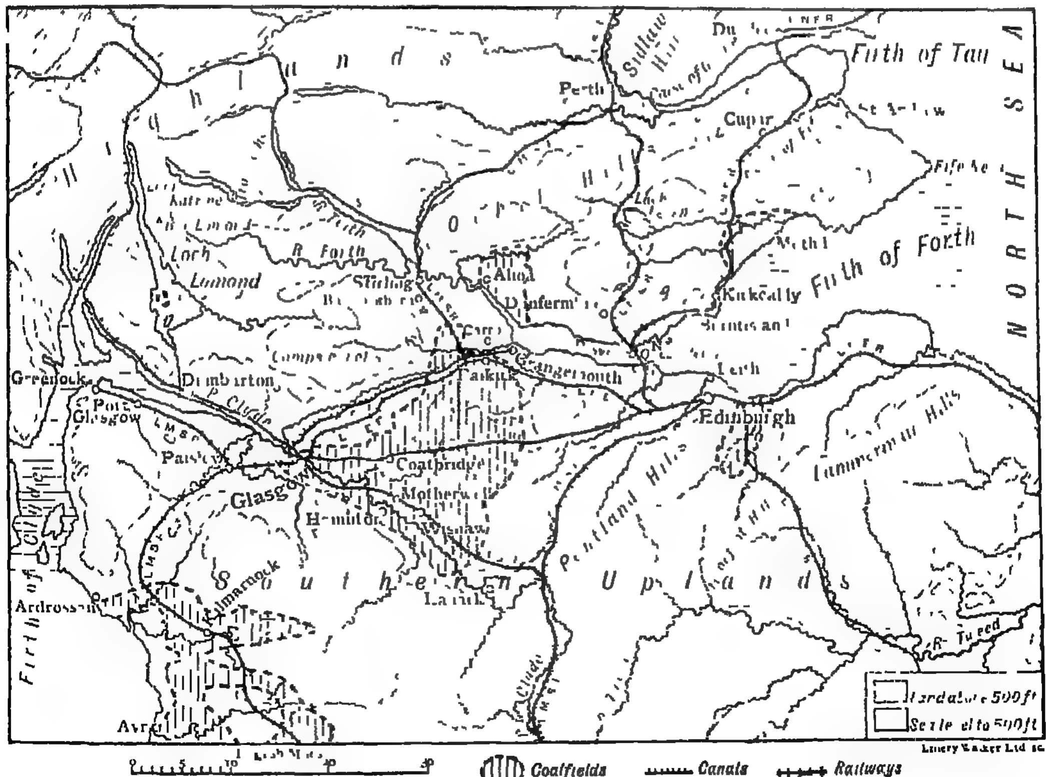
The story of shipbuilding.—One of the most important branches of the iron and steel trade is the building of ships. Coal and iron together have changed Britain from an agricultural to a manufacturing country The extent of the manufactures has depended on Britain's powers of transport by land and sea. Manufacturing calls for the collection of raw materials, probably from scattered parts of the world, into a special district. It also requires the work of masses of people who in turn need vast quantities of food. Britain's manufactures depend entirely upon transport, both for getting together raw materials and food, and also for taking away the manufactured goods to their markets. Britain cannot do without shipping. Consequently the country contains great shipbuilding yards, for there are materials to hand for making and launching ships, and the British people have done so much shipbuilding that they have a great deal of experience to fall back upon.

The shipbuilding districts in the British

Isles to-day differ from those of the past, because different materials are needed In the past, ships were made of wood—usually oak. Where supplies of wood could be found near the sea, ships were made. The depth of water did not matter, for the ships were small To-day the largest ships can be made only in the districts around the mouths of the rivers Clyde, Tyne and Lagan (on which Belfast stands) where there is very deep water. Moreover, the ships of to-day are made of iron and steel, and the shipbuilding yards have grown up where these materials are found at coastal districts, as in the cases of the Clyde and Tyne.

The great shipbuilding yards to-day are found in the north of the country The two main regions are (*a*) north-east England, around the rivers Tyne, Wear and Tees, and (*b*) the Clyde district These two areas together produce nearly all the British merchant ships made in a year, and the number is divided almost equally between the two The few ships not built in these areas are made at Belfast, Birkenhead or Barrow-in-Furness

The growth of the shipbuilding trade on the Tyne and Wear is linked up with the shipment of coal This district was the earliest coal-exporting region and sent coal by sea to London in the thirteenth and fourteenth centuries For the coal-carrying trade, ships were required. They were made in the district of wood obtained from forests close at hand, and then, when these had been all cut down, timber was brought back from Europe in ships that had carried away coal Early boat-building yards were small



THE CENTRAL LOWLANDS OF SCOTLAND

places usually belonging to one man A good carpenter set up his works on the riverside and made small ships Some of the greatest shipbuilding firms of Tyneside to-day are owned by men whose forefathers began in this way

When iron came to be used for ships, the industry did not fail in the Tyne and Wear districts as it did in other parts of the country Iron and steel were close at hand Small ships and small yards gave place to big ships and big yards The rivers were dredged, deepened and widened, when they were no longer wide or deep enough for the launching of the very large vessels

Shipbuilding yards.—Along the banks of the river Tyne to-day are twenty shipbuilding yards, nine on the north and eleven on the south bank, and there are 115 slipways for the launching of vessels At Jarrow, ore is imported and the ship is made and launched at the same works The river Tees, too, though not actually on the coalfield, has shipbuilding yards at West Hartlepool, Middlesbrough and Stockton.

The building of the *John Bower* in 1852 made the Tyne famous as the great centre for iron ships Among the modern triumphs of the north-east region are —

(*a*) The *Mauretania*, long the fastest steamer, crossing the Atlantic in four and a half days

(*b*) The *Nelson*, a battleship.

(*c*) The *Seatrain*, a steam ferry train boat now serving between New Orleans and Havana.

(*d*) The building of floating docks for Singapore (made at Wallsend) and Wellington in New Zealand

The Clyde became important as a shipbuilding region early in the nineteenth century Glasgow had grown up as one of the ports for trade with the West Indies and North America, and this had given rise to a demand for ships before the nineteenth century. Some of the first iron and steel ships were made on the Clyde, one being the *Comet* in 1811, the first steamer to take passengers regularly between Glasgow and Helensburgh, in Dumbartonshire, on the north bank of the Clyde

To-day no less than forty shipbuilding firms stand on the banks of the Clyde, mainly in the twenty miles between Glasgow and Greenock Triumphs of the Clyde are:—

(*a*) The *Empress of Britain*

(*b*) The *Queen Mary*

(*c*) The *Queen Elizabeth.*

The great importance of north-east England and the Clyde has come about through their good positions on coalfields and the advantage of their early start. The actual building of ships has led to the rise of other works in or near the shipbuilding towns. Such works are the building of ships' engines, electrical fittings, freezing machinery, and plant or machinery for distilling salt water at sea.

Of the three remaining shipbuilding districts, Belfast is the most important. Here on the banks of the Lagan are some of the greatest and most important yards in the world. The coal and steel used in the works have to be brought from central Scotland or Cumberland The distance is not great, and the region is excellently suited to the building and launching of ships

The shipbuilding yards at Barrow have arisen from the coal and iron works in the district

Birkenhead does not stand on a coalfield but is linked up with the steel works of the West Riding of Yorkshire.

Shipbuilding.—An account of the shipbuilding industry can be made very interesting by giving a simple description of each of the stages of construction in turn.

(*a*) The preparation of the slipway from which the boat will be launched. This is made on ground sloping to the water in which the boat will first float.

(*b*) Laying the keel.

(*c*) Fitting the ribs to the keel and giving them rigidity by transverse girders which

will act as supports for the decks to be constructed later

(*d*) Construction of the steel hull. Steel plates, correctly curved to give the proper shape to the vessel, are riveted together and secured to the ribs White hot rivets are used, and when these contract the plates are drawn tightly together.

(*e*) Building the steel decks These are built on the girders referred to above

(*f*) Partitioning off the internal compartments, and completing the steel construction of the hull.

The steel skeleton of the ship can then be launched and all other work—woodwork, fixing boilers and engines, and internal fittings and furniture—can be added afterwards. Much of the external painting is done before launching

A great variety of materials is required before a ship can be ready for sea, and it is obviously best if these are available at the shipbuilding centre *Timber* is required in large quantities for covering the decks and for the manufacture of ships' furniture British supplies of timber are quite inadequate for the needs of the country Decking is made of pine which is imported, and the furniture is usually constructed from mahogany shipped to England from the tropics The shipbuilding centre will thus in many cases import timber, and fashion it into its required form

The best ships' *rope* is manufactured from hemp, which is imported from India and the Philippine Islands, and made into rope at the ports

A large number of small boats and sailing ships require *sailcloth* which is manufactured from flax both home-grown and imported

Tar, paint, lubricating oil, brushes, tools, lamps and wire ropes are but a few of the other things necessary for ships' *stores*, and it is usually found that the shipbuilding towns are equipped with establishments for the supply of all that is required A ship is isolated when it is at sea (except for its wireless connection with inhabited areas) and must therefore carry stores which make it entirely self-supporting.

Ports.—Some ports which are commercial and not shipbuilding centres are equipped with dry or floating docks in which ships can be placed completely out of water in order to be overhauled and repaired The hull of a vessel may have to be scraped and painted, and boilers or engines attended to Such repairs are often quickly and economically carried out at ports where the ships are delivering and receiving cargoes Engineers, plumbers, painters, carpenters and boiler makers are some of the people who find employment at a commercial port

A commercial port must be (1) capable of safe approach by large ships, (2) fitted with docks, wharves and all the equipment for handling and storing cargo, and (3) a route centre for the collection and distribution of material. The great ports of the British Isles are on the estuaries of the rivers which penetrate areas of large population Thus London is at the head of the ocean navigation of the Thames, Liverpool has its situation on the deep water entrance to the Mersey, Hull stands on the large opening called the river Humber, and Glasgow is at the head of the deep water navigation of the Clyde The hinterland of each of these ports is an area of large population Southampton, at the head of Southampton Water, is sheltered by the Isle of Wight, and has the advantage of double tides. Although its background may be called a rural area, its nearness to London has led to its development as a great port for the largest passenger ships afloat

Where the rivers of important areas are without deep estuaries, protection has to be provided for ships either by building breakwaters or by constructing sheltering piers. Plymouth, the important port of call in south-western England, is rendered safe for ships by its breakwater Dover, owing to its nearness to the continent of Europe, has been made a port by the construction of an arti-

ficial harbour, and it is now one of the busy "cross-channel" towns.

The Potteries.—One of the most ancient trades in the world is the making of pots Even the women of the New Stone Age knew the art of pottery, and in the British Museum are beautiful Grecian vases nearly 3,000 years old.

Kitchen earthenware, such as jugs, jam jars and basins, is made from brown clay, but porcelain is manufactured from *kaolin*, the white china clay sent by ship from Cornwall and Devon to Liverpool, and thence by canal to the Potteries. The man who made the Potteries famous was Josiah Wedgwood, 1730-1795. He was the first to use kaolin, and it was due to his efforts that the canal from the Mersey to Stoke was made

In the making of china, the clay is ground up with water and mixed with bone ash to give it translucency. A lump of it is then placed on a flat wheel which is kept spinning, and the potter by moulding the clay with his hands makes it into any shape he pleases The vessel is then put into a warm drying room for about a week.

When dry it is turned in a lathe and smoothed, then placed in a fireproof box and baked in a kiln. The heat of the kiln is terrific (2,282° F) and bakes the pottery as hard as a stone During this firing the vessel shrinks to two-thirds of its original size. After firing it is decorated, dipped in glaze and baked again The finished goods are finally packed in crates and sent by barge along the canal to Liverpool or London. Water transport being smoother ensures safer delivery than transport by road or rail

The chief towns of the Potteries stand in a line along the Trent-Mersey canal. All of them—Tunstall, Burslem, Hanley, Stoke and Longton—are joined together under the name of Stoke-upon-Trent "The buildings of the Five Towns are buildings of ovens and chimneys—their air is as black as their mud—they burn and smoke all night, so that Longton has been compared to hell."

TEACHING NOTES

1. Types of ships.—The teacher should refer to the wonderful variety of ships engaged in carrying material and people to and from British ports, and should encourage the pupils to collect pictures of these ships Barges propelled by hand or tide, sailing barges, small coasting vessels, tramps, oil tankers and great liners are but a few of the vessels to be seen at any of our large ports.

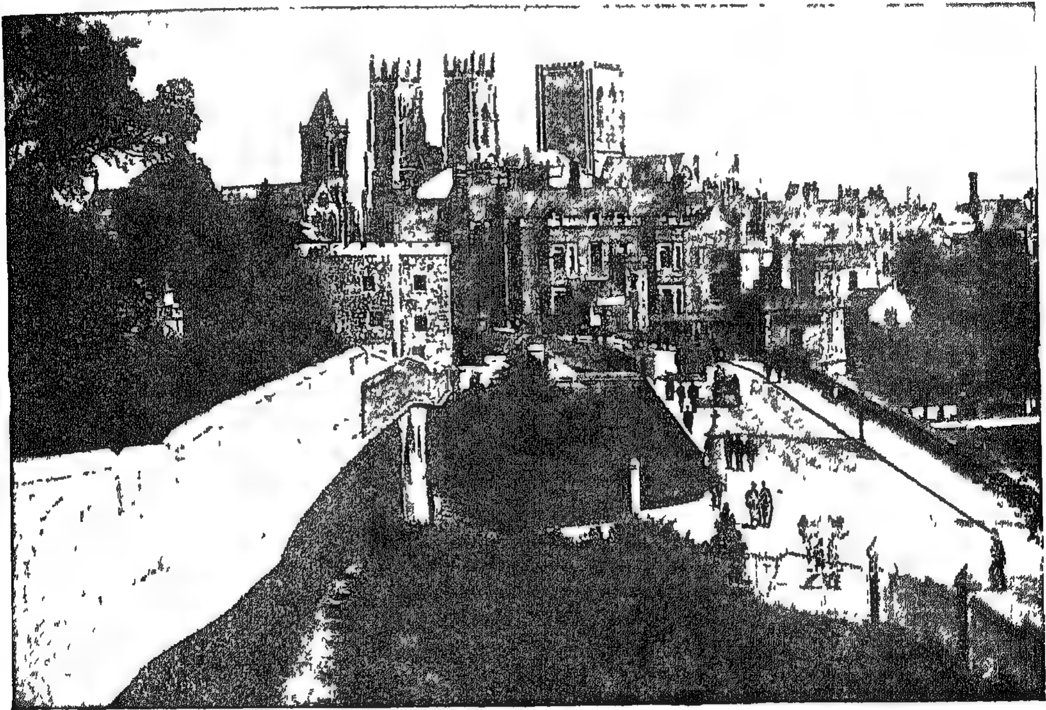
2. Pottery, a traditional industry.—Pottery is an unsurpassed example of the influence of tradition in causing an industry to remain in a particular place In "The Potteries" half the population has been engaged in the work for two centuries, and such a virile deep-rooted pride in craftsmanship has been built up as to outweigh all other factors—proximity to raw materials, sources of power and markets, and ease of transport—on which industries depend

3. Memory work.—(*a*) Ships keep Britain supplied with raw materials and food, and take away manufactured goods to foreign markets (*b*) The districts famous for shipbuilding are found around the rivers Tyne, Wear and Tees in north-east England, the Clyde in Scotland and the Lagan in Ireland (*c*) These districts are in good positions on or near coalfields, and close to deep river mouths. (*d*) China clay from Cornwall and Devon is made into pottery at Stoke-upon-Trent

4. Exercises.—(*a*) Why do the manufactures of Britain depend on transport? (*b*) Which are the greatest shipbuilding districts of the British Isles? (*c*) What first brought about the making of ships in these districts? (*d*) Why have these areas kept their importance? (*e*) Of what were the early ships made? (*f*) What is the chief material used in shipbuilding to-day? (*g*) Tell what you know of the different kinds of ships. (*h*) Name some famous modern ships

(i) How are the Belfast shipbuilding yards supplied with coal and iron? (j) Explain these words —*slipway, keel, hull, deck.* (k) Explain how shipbuilding provides work for people other than those engaged in the manufacture of steel. (l) Name some of the largest ports in the British Isles (m) How is clay taken from Cornwall to the Potteries? (n) How is an earthenware jug made? (o) Of what use are canals?

VIII. THE TEXTILE INDUSTRIES—WOOL



YORK, FROM THE CITY WALLS

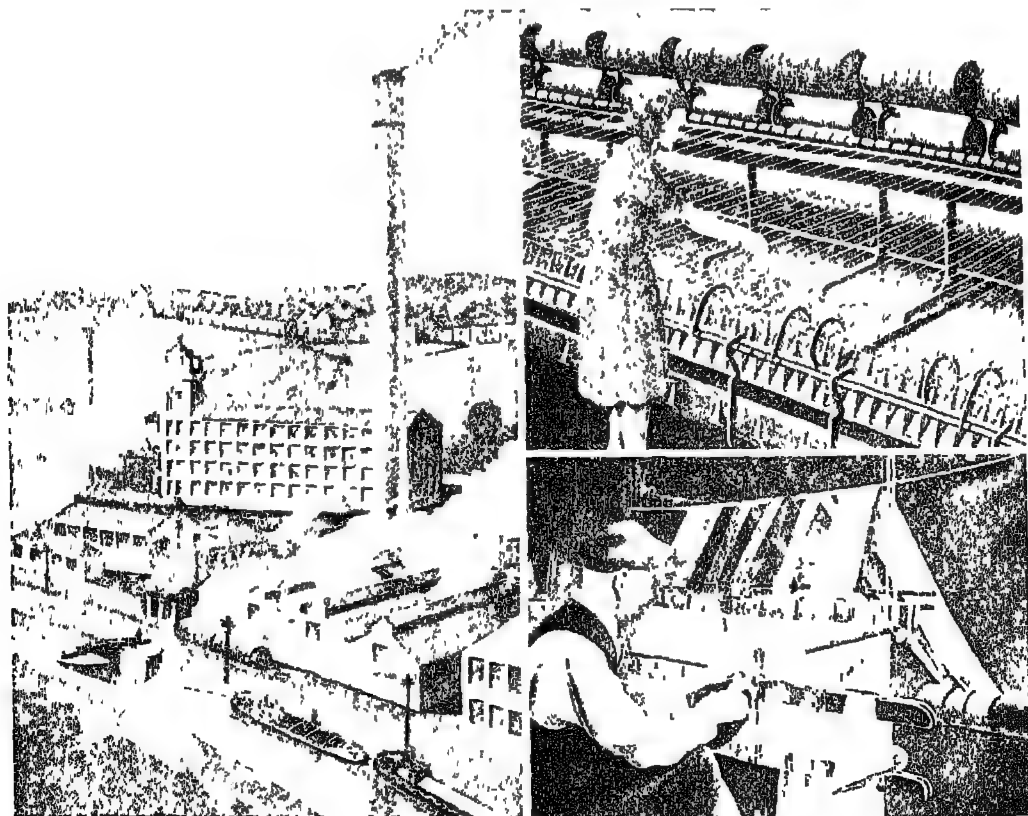
The story of cloth making in England.—The textile or cloth making trade to-day employs over one million workers More workers are employed by this trade than by any other branch of manufactures Moreover, the cloth-making trade produces the greater share of the nation's wealth, for one-third of the exports of the country are textiles

The textile industries are those in which cloth is woven from fibres such as wool, cotton, hemp, jute, sisal and silk The first two, wool and cotton, are the most important. The wool trade is the older of the two

We have proofs that cloth making was carried on in Britain when the Romans were here, and it is mentioned from time to time down to Norman days. It was not until

the Middle Ages, however, that wool came to play a great part in the growth of the country's trade At first, British weavers lacked the skill to produce anything but the roughest of cloths, so all the spare wool went out of the country to Bruges, Ghent and Ypres, the great cloth making centres of Europe The manufactured cloth found markets throughout western Europe and in Britain, where it was bought at a high price, which gave the Flemish weavers good profits In the thirteenth century England began to have a cloth trade of its own. Edward III invited foreign weavers to come over to England and teach the English to weave good quality cloths The most famous of them was John Kempe, who lived first at Norwich and afterwards moved on to the Lake District. The foreign weavers settled chiefly in London, York, Norwich, Rochdale, Manchester, Kendal, Halifax and Bristol. From the Flemish weavers English workmen acquired the skill which laid the foundations of later success.

With the growth of the cloth trade in our islands the export of raw wool fell rapidly, and the export of cloth took its place English weavers began to thrive at the expense of the Flemish Their success was so great that the farmers turned to sheep rearing rather than to crop growing. The breeds of sheep were improved and larger



MAKING CLOTH

Left A WOOLLEN MILL, YORKSHIRE

Right above A SPINNING MULE *Right below* COTTAGE HAND WEAVERS, SCOTLAND

(Class Picture No 109 in the portfolio)

numbers were raised By the sixteenth century the woollen cloth trade was firmly established in this country, and it was, until the nineteenth century, the most important industry next to agriculture

During the Middle Ages the actual making of the cloth was carried on in the cottages Women and children spun the yarn by hand, and men wove the cloth on hand looms The wool workers had become a very important body of people, and for the advantage of their craft they formed themselves into *guilds* In the weavers' guild of London each man was his own master, and employed assistants called *journeymen*, and also *apprentices*, who in their turn, when they had learned the trade, could set up as masters.

In the sixteenth century the trade passed into a second stage *Capitalists* began to appear—men who bought up the raw wool, shared it out among the spinners and collected the yarn, then they divided the yarn among a number of weavers, collected the cloth, and sold it The capitalists sometimes gathered the workers together in one building. This plan was followed by John Windicombe and Jack of Newbury, and in this plan lay the beginnings of the factory system.

The present day factory system came about through the inventions of wonderful spinning and weaving machines in the eighteenth and nineteenth centuries, and these inventions were further helped by the use of steam power to drive the machines The old spinning wheels and hand looms soon grew out of date The new machines were used first in the cotton trade and afterwards in the woollen industry. The demand for coal led to the rise of the industry in districts where coal was at hand Before coal came to be used the woollen industry was scattered up and down the country, wherever there were sheep and supplies of pure, soft water which were needed in the making of the cloth. The eastern counties, the western counties, the northern counties, Wales and Scotland all made cloth. Each district produced a special cloth of its own. There were Norwich fustians, Kentish broadcloths, Devon kerseys and Kendal greens. From being widespread, the cloth industry in the nineteenth century had become settled in a few districts, and in one place in particular, viz , the coalfield region of the West Riding of Yorkshire, where more than three-quarters of the wool workers in the country now live. Other areas of woollen manufacture to-day are (1) East Lancashire, which is a branch of the West Riding area, (2) the Scottish Border and the Tweed, (3) the West Country, (4) Leicestershire, and (5) Wales.

The trade has long outgrown the home produce of wool Vast quantities have to be imported each year. These are brought largely from Australia, New Zealand, South Africa, the Argentine and Uruguay. The chief ports to which the wool comes are London, Hull and Liverpool, and smaller amounts are taken in at Southampton, Bristol, Manchester and Leith

Cloth making.—In the manufacture of cloth, many different processes or methods of treatment follow one another, some of them being combing, spinning, weaving, dyeing and finishing In early days each of these processes was carried out by special people There were spinners, weavers, dyers and fullers. In the worsted trade, the processes are still carried out by different firms, but in the woollen trade now it is usual to find all the processes at work in one factory. The worsted trade requires long wools which make strong, reliable threads in the cloth The woollen trade uses short wools and wool rags, so that the threads in the cloth are finer than in worsted material, and, after weaving, the cloth is *felted*, or pressed and rolled until it becomes matted

In an area twenty-five miles from east to west and thirteen miles from north to south is grouped more than three-quarters of the whole number of British wool workers, and in East Lancashire, just outside this district, is another group. The West Riding is the most important producing region of the

British Isles for both woollens and worsteds. During the last one hundred and fifty years some forty towns have grown up and spread towards one another, so that they now form one great manufacturing area containing a million and a half people.

This district had certain advantages which helped the industry in the past as well as in the present. The Pennine moorlands made good sheep pastures. The Pennine streams provided supplies of pure and soft water needed for washing and scouring, and also provided power which was used in the manufacture of woollens In the shrinking and felting processes through which woollens have to pass, waterwheels were used to work the rough wooden hammers with which the cloth was pounded in fuller's earth and water. The fulling mills were the earliest textile power mills in the land.

The use of machines, and of water power for the spinning frames, gave the Pennine region still more advantage over other areas Then, when coal came to be used to produce steam power, the West Riding had the further advantage of being on a coal-field Thus the industry became firmly established in the West Riding, and went forward by leaps and bounds, while in other parts of the country it dwindled away. Norwich gave place to Bradford, small cottage industries gave place to the mighty Yorkshire mills Woollen cloth is still made in the Cotswold villages and in the Tweed and Cheviot districts, but elsewhere the craft has gone The industry in the West Riding is now found chiefly in the river valleys of the middle Aire, Calder and Colne. Within this area special districts produce special kinds of cloth.

1 *Worsted manufacture* In the northern region, particularly in the valley of the middle Aire and its tributaries, the worsted industry is carried on. Bradford is the centre of wool combing and the worsted trade. It is, indeed, the great market for the whole of the wool industry It is the chief buyer of raw wool and the chief exporter of yarn and cloth. Other worsted towns are Halifax, Shipley, Bingley, Keighley, Crosshills and Otley. The kinds of cloth produced are worsted coatings and suitings, showerproof and waterproof cloths, dress goods of many kinds for ladies' wear, and linings for suits and overcoats.

2. *Woollen manufacture.* The Leeds district, the region to the south and south-west of Leeds, and the Colne and Calder valleys are given up mainly to the woollen industry In the Colne valley fine cloths and tweeds are made Morley, Batley and Dewsbury are centres for felts, velours and flannel, and for "shoddy" cloth, which is made from yarns that have been used before.

3 *Both industries.* The worsted and woollen trades overlap each other in some of the towns. Leeds, Halifax and Wakefield have both woollen and worsted spinning and manufactures. Halifax makes carpets and other heavy woollen goods.

The woollen industry has set up a demand for machinery, and therefore some towns such as Keighley, Leeds, Bradford, Halifax and Huddersfield make machines for the cotton and woollen mills.

The largest town in the West Riding is Leeds, with a population of nearly half a million people. It stands in the middle of the Aire valley and is the meeting place of many routes. It commands the Aire Gap through the Pennines to Lancashire and Liverpool, and links up roads from other valleys and routes across the hills. Leeds has not such an outstanding position in the woollen trade as Manchester has in the cotton trade. Spinning and weaving are carried on, but these are not its chief work. Wool workers take the fourth place only in the population of the city of Leeds. Because it carries on many different industries, Leeds is marked off from the other towns of the West Riding. Its chief trade is the manufacture of clothing.

The making of machines for the mills, and the collecting and carrying of goods to and from different places are industries almost as important as the clothing trade.

A great many people are engaged in the building, woollen and printing trades.

The Aire Gap.—In olden days people lived mainly on what they produced, and knew very little about any part of the world excepting the district in which they dwelt. They used skins for clothing, and stone for weapons and tools When, however, they came to require textiles for clothing, better houses and more varied food, they went in search of the new materials, and thus routes gradually developed. At first, these were rough pony tracks leading over hills and across fords; but when wheeled transport came into use the routes kept to low ground. Thus it was that gaps in the hills became immensely important

Of such gaps the Aire Gap is probably the most important in the country It cuts through the middle of the Pennines, which separate the two great manufacturing areas of Lancashire and Yorkshire. The river Ribble flows in the west opposite the Aire in the east, and the two valleys provide the only easy route through the Pennines by which railways and roads can pass. Consequently, the traffic using the Aire Gap is very heavy. A canal has also been cut through the gap.

The roads lead to Liverpool on the west and to Leeds on the east of the Pennines. Because of its position, Leeds has become one of the largest towns in Yorkshire, and the great distributing centre for the West Riding, of which half of the population is concentrated in the Aire valley.

The Tweed and Cheviot region.—This region stands next to the West Riding in the number of people employed in the woollen manufacture. The chief centres are Hawick, Galashiels, Selkirk and Peebles The trade is a very old one. In early days it depended upon supplies of raw wool from the sheep reared near by on the Southern Uplands, and on a plentiful supply of pure water from the streams in the Southern Uplands. To-day the industry has further needs The sheep of the Southern Uplands are largely the black-faced breed with coarse wool, which is not suited to the making of high-class goods. The best quality raw wool has now to be imported. Coal has come to be used for power instead of water. The region is not on a coalfield, but obtains supplies from the Midlothian field, near Edinburgh.

The region makes high-class goods for which there is a special sale Some of these are Scottish tweeds, fine woollen underwear and high grade hosiery. The trade has gone ahead in spite of the lack of coal and good wool It has spread beyond the Gala and Teviot valleys There was not space enough for the growth of Galashiels and Hawick, so mills were built at Selkirk to cope with the extra work

The cloth largely made in the Scottish border towns is called tweed. Its original name was "twill" or "tweel," and it came to be called "tweed" through an error in writing on the part of a London clerk

The west of England.—In the west of England the woollen industry is scattered in the valleys of the Cotswold Hills, where supplies of wool and water were once plentiful, and in the counties of Gloucestershire, north-west Oxfordshire, north Wiltshire and Somersetshire The trade is now but a shadow of its former self, but is still famous for certain classes of woollen and worsted goods, such as riding tweeds, whipcords and rugs The chief towns are Stroud in Gloucestershire (where both woollen and worsted manufactures are carried on), Trowbridge in Wiltshire, and Witney in Oxfordshire. Witney is noted for its blankets.

Leicestershire.—In this district the chief product is yarn to be used in the hosiery and underwear trades The manufacturers, however, do not use this yarn only, but also silk, artificial silk and woollen yarn bought from the West Riding. All kinds of underwear, sports coats, jumpers, football jerseys, sweaters, scarves and bathing costumes are

made, as well as hosiery The chief centre is Leicester, and other wool manufacturing towns are Loughborough, Hinckley, Melton Mowbray and Wigston.

TEACHING NOTES

1. Introductory.—An interesting introduction to this lesson might be made by placing a pupil in front, and encouraging the class to talk about the materials of which his clothes are made and where the garments were manufactured The teacher might then write a list of garments on the blackboard and state opposite each the name of its material and the place of manufacture. Any pupils whose relatives should chance to be employed in the making of any of the garments might be able to add information Pictures, sketches and photographs should be shown. A talk upon raw materials might follow, and if possible specimens should be shown of raw wool, cotton, flax and silk

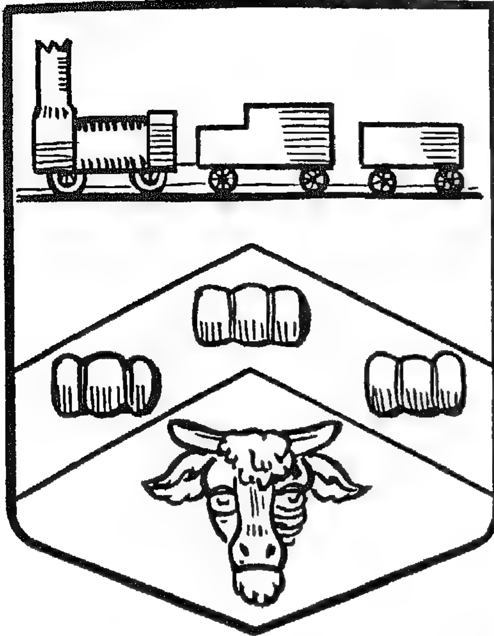
2. Spinning and weaving.—Practically all the fibres used in textile manufacture need spinning first, and weaving is a subsequent process Spinning consists in twisting the comparatively short fibres into long threads or yarn, and such threads should be of uniform thickness and strength In weaving, two sets of threads are used, the warp is stretched lengthwise in the loom and the weft is run across the machine and is transverse to the cloth The weft threads are in shuttles which move backwards and forwards between the warp threads, and the warp must be the stronger threads Coarse threads can be spun from fibres while dry, but for fine yarns some damping is always necessary The nature of the damping depends upon the character of the fibre to be spun. In the case of cotton, water is used, but for wool an oil is necessary. It is usually olive oil that is used for wool damping. Let the children examine a piece of woollen cloth, and find the warp and weft threads

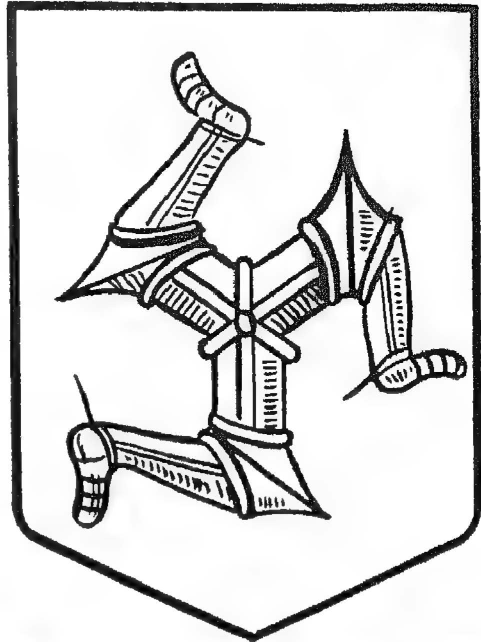
3. Fibres used in industry.—Fibres are used very largely in the manufacture of the clothing of mankind, in the preparation of materials for his dwelling place, and in the production of useful articles used in industry. The pupils should be familiar with the chief things made from the important fibres of the world

Fibre.	*Chief materials manufactured.*
Cotton .	clothing, calico, thread
Wool	clothing, carpets, blankets.
Flax .	linen, sailcloth
Silk .	clothing, furnishing—curtains, etc.
Jute	sacking, floor coverings, canvas.
Hemp .	rope, string
Coir	matting, coarse rope
Mohair	table coverings.

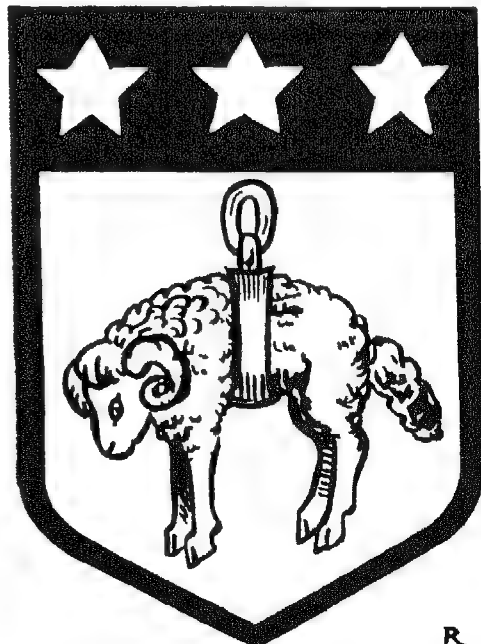
4. Memory work.—(*a*) Britain is famous throughout the world for textile or woven goods (*b*) Some of the fibres woven are wool, cotton, hemp, flax, jute, sisal and silk. (*c*) Weavers who came from Flanders in the reign of Edward III taught the British people how to make cloth of good quality. (*d*) The invention of spinning and weaving machines and the use of steam power caused the rise of the factory system. (*e*) The chief areas for wool manufacture are the West Riding of Yorkshire, the Scottish Border and the Tweed and Leicestershire (*f*) Vast quantities of raw wool are sent to Britain from Australia, New Zealand, South Africa and the Argentine. (*g*) The wool is shipped chiefly to the ports of London, Hull and Liverpool (*h*) In the West Riding are pastures for sheep, pure water for washing the wool, and coal to produce the steam power for the machines (*i*) Bradford is the centre of the worsted trade (*j*) Leeds commands the Aire Gap through the Pennines, is the meeting place of many routes, carries on a great transport trade, and manufactures wholesale clothing and machines for the factories. (*k*) The Tweed and Cheviot region in Scotland makes high-class tweeds, fine woollen underwear and high-grade hosiery.

SKETCHES FOR THE BLACKBOARD









R

PUBLIC ARMS

DARLINGTON
(The "Rocket" attached to a tender and wagon, three bales of cotton and a bull's head)

BRISTOL

ISLE OF MAN
(The Isle of Man "Kneels to England, kicks at Scotland, and spurns Ireland")

LEEDS

(*l*) Leicester is noted for hosiery, sports coats, jumpers, football jerseys and underwear.

5. Exercises.—(*a*) What do we mean by the *textile* trade? (*b*) What fibres are used in it? (*c*) Which was the chief cloth-making country in the Middle Ages? (*d*) What trade was carried on between England and that country? (*e*) How did the English become successful at cloth making? (*f*) Explain why the West Riding of Yorkshire was suited to woollen manufacture in the past. (*g*) What brought about the building of factories for the woollen trade? (*h*) Why did most of the factories spring up in the West Riding? (*i*) What other parts of Britain are noted for their woollen trade to-day? (*j*) Which countries send raw wool to Britain? (*k*) Name the chief ports for this wool. (*l*) Why is Leeds the largest town in the West Riding? (*m*) What industries are carried on in Leeds? (*n*) Tell all you know about the woollen industry in Scotland.

IX. THE TEXTILE INDUSTRIES—COTTON

The story of the cotton trade.—The cotton trade of this country has by no means such a long history as the woollen trade, but it has had a wonderful growth Two hundred years ago the cotton industry scarcely existed, but one hundred years later it had become more important than the older woollen industry. To-day it is the greatest of all the manufacturing industries in this country, giving employment to some 620,000 workers The export of cotton goods is higher in value than that of any other manufacture

Unlike the woollen trade, which first made use of supplies of British wool, the cotton trade has depended from the very outset upon supplies from abroad, for the cotton plant grows in warmer lands than Britain

Unlike the woollen trade, which at its outset was widely scattered, the cotton trade from the first grew up in one special area only. This was south and east Lancashire. The region was chosen for many reasons. What were they?

Cotton, unlike wool, needs a damp climate for the spinning and weaving of the threads. The cotton fibre is brittle and likely to snap unless it is woven in damp air The western half of the British Isles has a mild, moist climate all the year round Thus any part of western Britain might have been chosen for the cotton industry if the choice depended only upon climate.

Western Britain is high and rugged in many places, and these parts were not suited to become manufacturing areas. The lowland districts were the lands around the mouth of the river Severn, the Cheshire plain and the Clyde valley Of these three, the Lancashire district adjoining the Cheshire plain became the seat of the cotton trade, because it was already noted as a place for the manufacture of woollen and linen goods In this part, money to lay out on new works and skilled labour were to be found

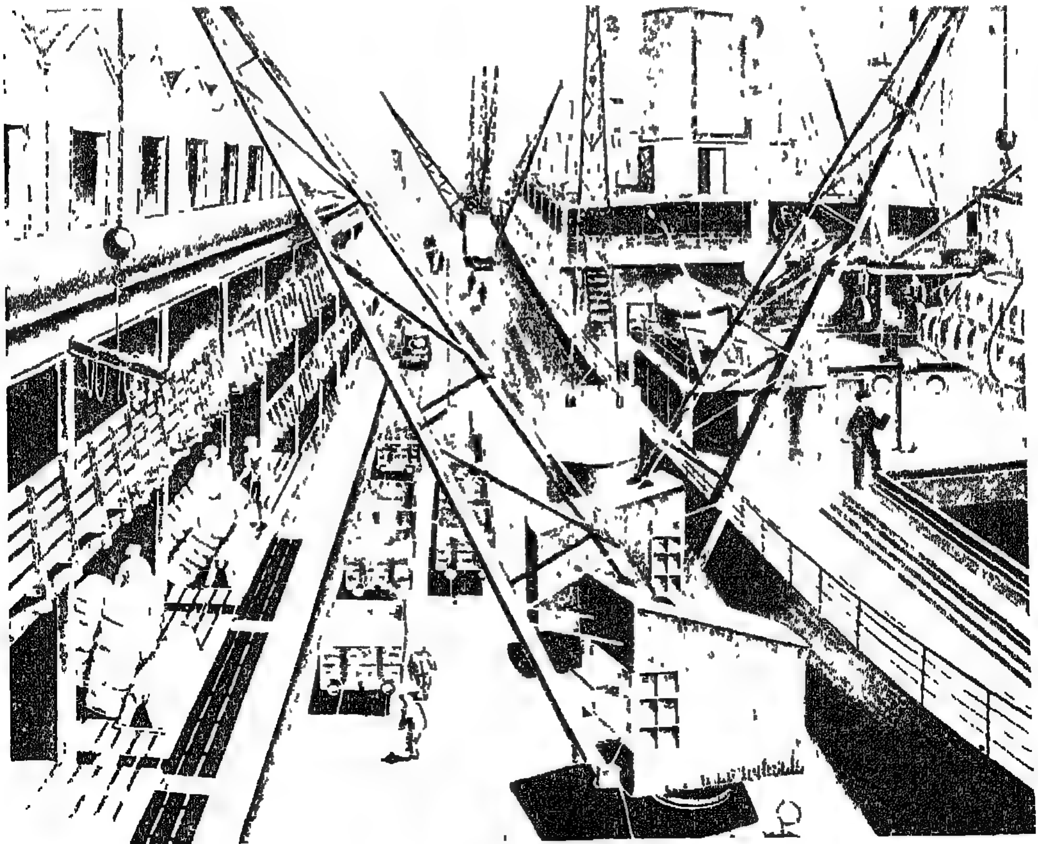
The early cotton goods were not made entirely of cotton At the outset the spinning of the fibre was done by hand Hand spinning could not give the extra twist to the thread that made it really strong, so cotton yarn was not used for the warp threads upon which the strain is greatest in weaving. The strong thread was supplied by either a linen or a woollen thread, and cotton was used for the weft. For supplies of linen, Lancashire was in a good position, because flax was grown across the sea in northern Ireland.

Clever Lancashire men then began to make experiments with machines and at length invented some for spinning and weaving that laid the foundations of the great cotton trade of to-day

John Kay, born near Bury in Lancashire, made a "flying shuttle" which ran by machinery through the warp threads Until this invention, the shuttle had always been thrown through the threads by hand, so that the width of the material had not been more than a man's reach, or else, for wider materials, two men had been required, one on each side of the loom Kay's invention did away with the need for two men, the material could be made quickly and any width.

John Hargreaves, of Blackburn, invented, about the year 1764, the "spinning jenny," in which a wheel turned many spindles at once, and a moving framework carried cotton or wool to the spindles This machine, however, could spin only weft yarn

Richard Arkwright was born at Preston and lived later at Bolton. In 1768 he invented a "water-frame" for spinning thread, in which the threads passed through rollers on their way to the spindles The rollers stretched the threads and the spindles



UNLOADING COTTON AT MANCHESTER DOCKS

(Class Picture No 110 in the portfolio)

twisted them by turning round. Arkwright's machine could therefore spin twisted yarn, which was strong enough for warp threads and more even in thickness and more regular in twist than any spun before

Samuel Crompton, of Bolton, invented a spinning machine which did the work of the spinning jenny and water-frame in one. He called it a "mule" It could spin both fine and stout thread, and was useful for either warp or weft The thread could now be spun so quickly that a weaving machine was wanted to increase the output of cloth.

Edmund Cartwright, a clergyman in Leicestershire, in 1787 invented a loom on which the weaving machines of to-day are based. Thus at the end of the eighteenth century both spinning and weaving machines had appeared in Lancashire. They were taken up gradually, and at length the textile industry passed from the cottage to the factory.

Power was needed to drive the new machinery Arkwright's spinning frame was driven by water, and consequently spoken of as the "water-frame" The mills for spinning, therefore, sprang up where water power could be found The streams from the Pennines and the Rossendale forest were plentiful, and mills grew up along their valleys. Then, at a later date, water power gave place to steam power. Coal was now required The Lancashire coalfield was on the spot, and there was no need for the industry to move to fresh fields, or to stand the burden of paying for the transport of coal. The spinning and weaving factories tended to move towards the coalfield, and great manufacturing towns grew up in the place of scattered mills

To sum up, the cotton trade has settled in Lancashire because —

(1) The district has a damp climate suited to the spinning and weaving of cotton.

(2) Cloth making was already being done there. The wool and linen mills were used for the cotton material in its early stages Money and skilled workmen were at hand for the new industry

(3) The inventions of clever men aided the growth of the trade

(4) There were plentiful supplies of water (*a*) for power to drive the machinery before steam power was used, and (*b*) for use in bleaching, dyeing and printing

(5) Good and plentiful supplies of coal were found in the district.

(6) A port was needed to take in the supplies of raw material, and this port was Liverpool

Liverpool was in a good position near the coalfield and grew along with the cotton industry. The port has the advantage of being on the west coast facing the countries from which supplies of raw cotton are drawn Within the British Isles Liverpool is well placed, for it has open roads to all the great centres of population in London, the midlands, the West Riding and north-east England

The early port for the import of cotton was, however, not Liverpool but London Raw cotton formed part of the return cargoes of boats trading on the Mediterranean Sea The chief supplies of raw cotton came from the eastern countries of the Mediterranean region, particularly Turkey and Cyprus It was not until the end of the eighteenth century that London became second to Liverpool for cotton importing This was due to the rise of the West Indies, and at a later date the south-east states of the United States of America, as cotton growers and exporters

Lancashire now draws its supplies of raw cotton mainly from the United States of America and Egypt Other sources of supply are India, the Sudan, Uganda and the West Indies Indian cotton, second in quantity in world importance, is short stapled and generally unsuitable for the fine work of Lancashire mills Improvement in quality, however, is bringing it increasingly into use

The cotton trade in Lancashire to-day.—The early cotton workers did both spinning

and weaving under one roof, but the two processes have gradually been separated Some firms are engaged entirely in spinning and others in weaving The towns around Manchester in the southern half of the manufacturing district mainly contain spinning factories In the towns in the northern part of the area, the yarn spun by the southern towns is woven into cloth

Liverpool is the greatest cotton market in the world. Four-fifths of the raw cotton imported into Lancashire passes through its docks. The other fifth goes directly to Manchester by the Manchester Ship Canal Manchester is the great market for the finished goods.

The imported raw cotton is sent from Liverpool to the spinning mills which lie around Manchester in the south-east of Lancashire It travels mainly by rail, but more and more is now being taken by motor lorry, and some still goes to the mills by canal

The chief spinning towns are Manchester, Stockport, Ashton, Mossley, Oldham, Rochdale, Bury, Bolton, Heywood and Wigan. Different towns spin different kinds of cotton The best Egyptian or Sea Island cotton, with long fibres, goes to Bolton and Manchester and the towns near by, while the shorter fibred American or Indian cotton goes to the Oldham, Rochdale and Stockport districts.

The spun yarn is sometimes sent to weaving sheds in the same town, but the greater part goes northwards to the weaving towns beyond the Rossendale hills In the valleys of the Ribble and its tributaries the Lancashire Calder, the Darwen and the Douglas, lie the chief weaving towns—Colne, Nelson, Burnley, Accrington, Blackburn, Darwen and Preston In the north-east, the weaving has spread beyond the county into the valleys of Yorkshire, and is carried on at such centres as Skipton, Barnoldswick and Earby

Manchester is the great exchange between the cotton spinning and weaving towns At the Manchester Royal Exchange the spinners are put into touch with the weavers

After the yarn is woven, the cloth made, which is known as "grey cloth," has yet to be "finished" Some of the "grey cloth" is sent abroad to be finished, but the greater part goes through one or all of the three processes of bleaching, dyeing and printing in the Lancashire district before it is sent to the warehouses of Manchester

All the three processes require a plentiful supply of pure water all the year round. The Lancashire district is well watered. The mills are scattered along the sides of nearly all the streams from the Colne and Clitheroe southwards to the border of the cotton region. The mills are often found in almost moorland areas, very different from the districts in which the factories of the big spinning and weaving towns stand.

The enormous amount of chemical stuffs such as alkalis used in the bleaching, dyeing and printing trades has led to the growth of chemical works in the Mersey basin This is the greatest region in the world for the manufacture of alkalis The foundation of the industry is common salt Rich salt mines are found in the Cheshire plain around Northwich, and salt is also dug near Fleetwood, in north Lancashire.

A second trade which is the direct outcome of the growth of the cotton industry in south Lancashire is the making of textile machines To-day the spinning and weaving machines made in Lancashire are the best in the world. Some 20,000 men are engaged in this work, and the machines that they make find markets not only in Lancashire and Yorkshire but also abroad The chief centre is Oldham, but nearly every town has some branch of the trade, the largest works being at Manchester, Bolton, Accrington, Bury, Blackburn, Burnley and Heywood

The "finished" cloths pass from the finishing works to the Manchester warehouses and packing houses Packing in Manchester is an important industry, and is in the hands of special firms.

Manchester is the business centre, shopping centre and amusement centre of south-east Lancashire. It is the meeting point of many routes Roads along and across the river Mersey join at Manchester Here the Pennines are at their narrowest, and there are routes through them from Manchester to the West Riding of Yorkshire. Liverpool is easily reached, and the cutting of the Ship Canal has added to Manchester the trade of an ocean port

The Manchester Royal Exchange is the core of the cotton textile industry. It is the place where most of the business is done "Spinners and weaving masters, yarn sellers, cloth sellers, merchants, bleachers, dyers, printers and finishers attend Manchester to do business. Great numbers go every day, but Tuesdays and Fridays are the special market days. On these days 12,000 men attend Manchester to buy and sell something which has to do with the cotton industry "

The Lancashire cotton industry spreads beyond the county borders into Cheshire, Derbyshire and Yorkshire, to Macclesfield, Congleton, Hyde and Stalybridge in Cheshire, to Leek in Staffordshire, to Marple, New Mills, Hayfield and Glossop in Derbyshire and to Saddleworth in Yorkshire

The cotton industry of the Glasgow district.—Glasgow is Manchester on a small scale. The cotton industry settled here from the earliest days of cotton manufacture. The district is in the west of the British Isles and thus has a damp climate There is also a coalfield close at hand All branches of the work are carried on. The Paisley mills produce sewing cotton famous throughout the world

The cotton industry of the British Isles is one which manufactures goods very largely for export One-seventh only of the produce is bought at home, the rest is sent abroad,



GEORGE SQUARE, GLASGOW

TEACHING NOTES

1. At the factory.—Raw cotton is imported in bales, each bale weighing about 500 pounds The contents of the bales when opened are seen to resemble a rather dirty white mass of cotton wool. On close inspection the mass is found to consist of a tremendous number of short fibres. Sometimes, if it should be what is called "long staple" cotton, the fibres are an inch and a half in length, but in the case of "short staple" the fibres average about half an inch in length. The fibres are matted together, and the first operation is *willowing*. The machines for this purpose have revolving rollers covered with spikes which shake the material free from all dust and dirt. The fibres become loosened but are still more or less entangled. They are then passed into another machine and rolled into layers which resemble sheets of wadding. The *carding* machine then lays all the fibres parallel to one another and produces a round, thick, soft and untwisted mass of raw cotton. By the next operation, in the *drawing* machine, a thinner and stronger mass is obtained which is then ready for spinning. When spun, the cotton is called *yarn*, and its fineness is denoted by what are called "counts," which means the number of lengths of threads, each 840 yards long, contained in 1 lb of the yarn The counts vary from 18's up to about 100's and beyond that the threads are twisted in two-fold yarn

2. Weaving.—The cotton yarn is delivered from the spinner either on bobbins or in large balls or "cheeses" The threads are then run directly on a beam for inclusion in a loom and, for better class goods, constantly brushed, or are first strengthened by treating with starch solution and then drying over heated cylinders Finally actual weaving takes place and the weft threads are interlocked with the warp

3. Bleaching and dyeing.—Very few fibres are produced by nature in the colours required by man. So-called white fibres are not pure white, and the need for coloured material is obvious. Textile goods are *bleached* to bring them to a standard white colour. The nap on the material is singed off by passing it rapidly between gas jets. It is then soaked in water, boiled in a milk of lime solution, washed again, boiled in water containing soda and then soaked in a liquid containing bleaching powder made of lime and chlorine. Finally it is washed, mangled, dried and packed. The chemical industry is thus essential for textile work.

The old dyes were made from cochineal, or from the juices of plants and trees To-day most dyes are made chemically from coal tar. Vegetable dyes are stains, but chemical dyes produce the required colours by chemical change on the cloth which must previously have been dipped into a prepared solution of some oxide of a metal. Manchester specialises in the dyes suitable for cotton material

4. Specialisation.—The great number of operations in the manufacture of cotton material indicate the need for specialisation of work. It is impossible for all the machinery and human skill for the complete manufacture to be concentrated in one town Consequently there have arisen spinning, weaving, dyeing and bleaching towns as well as places for the building of all the requisite machinery Thus Liverpool and Manchester have become cotton ports and market centres; Oldham and Bolton, in the area of damp air near the Pennines, specialise in spinning. Burnley, Blackburn, Preston and Bury are weaving towns Bolton has a great bleaching and dyeing industry, Manchester manufactures machinery, and St. Helens and Widnes manufacture chemical materials needed by their own factories and by those in other towns carrying on similar work.

5. Public Arms.—Here are legends which have been handed down concerning the armorial insignia of Glasgow.

The Arms refer to a number of stories, and the different emblems recall several legends

told of St. Kentigern, or, as he is sometimes called, St Mungo. This saint, who died c. A.D. 602 was the first bishop of Glasgow. There is a legend that some of the saint's enemies had put out the church lights, and that St. Kentigern thereupon commanded a bough to burst into a blaze in order to re-kindle them. The tree in the centre represents the bough of the legend. The bird perched upon the tree stands for the pet robin of St. Serf, which, when it died, St Kentigern is said to have brought to life again. The church and see of Glasgow were founded by St. Kentigern; this is represented by the bell which hangs from the tree.

There is another account of the bell emblem, which states that it stands for a consecrated bell brought from Rome by St. Mungo on his return, towards the end of his life, from the sacred city; and which was preserved in the College at Glasgow, until the Reformation, or even later This bell, called St. Mungo's Bell, was tolled to warn the citizens to pray for the repose of a departing soul.

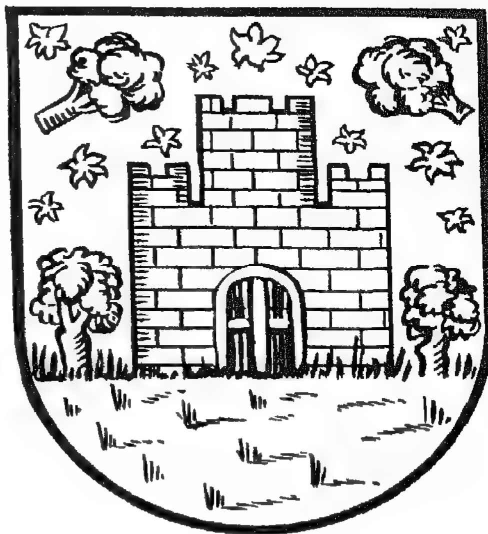
The story of the salmon with a ring in its mouth is a highly romantic legend. A queen of Cadzov had given to a certain knight a ring which had been a present from her husband The King had his suspicions on the matter, and becoming very angry, considered how best he could revenge himself It chanced that the King and his court were out on a shooting expedition on the banks of the Clyde, when the King saw the knight sleeping soundly under a tree To verify his suspicions, the King looked in the sleeping knight's pouch and found the ring In great wrath the King flung the ring into the Clyde, returned home with all speed, and demanded, on pain of death, that the Queen should show him the ring On this the Queen sent her maid to the knight to ask for the ring, which of course had disappeared In this dilemma the Queen turned to the good bishop Kentigern, and implored his help, after confessing her fault and her sorrow for it The good bishop believed in her contrition, and promised to assist her. He sent one of his servants to fish in the Clyde, and gave him orders to bring to him the first fish he should catch This was done, and the fisherman brought to the bishop and laid at his feet a huge salmon, the bishop drew from its mouth the very ring the King had flung into the river, and St. Kentigern gave it to the Queen with his blessing Thus owing to the good offices of the benevolent St. Kentigern, the Queen was able to produce the ring to her husband, and her life was saved

6. Memory work.—(*a*) The cotton industry is carried on in Lancashire and near the Clyde estuary. (*b*) In these districts the climate is damp, there are excellent ports and plentiful supplies of coal and water (*c*) Raw cotton is imported from the United States, Egypt, India and East Africa. (*d*) The cotton industry of Lancashire has given rise to the growth of chemical works and the making of textile machines

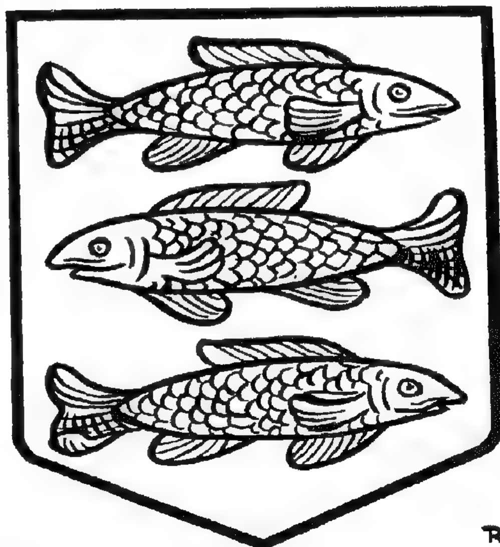
7. Exercises.—(*a*) Give as many reasons as you can why cotton goods are made in Lancashire. (*b*) What is the difference between spinning and weaving? (*c*) How were machines worked before the invention of steam engines? (*d*) Explain why Liverpool has come to be such a great port (*e*) Which countries send supplies of raw cotton to Britain? (*f*) How do the cotton towns differ from one another? (*g*) Write out a list of the cotton towns of Lancashire (*h*) Tell all you know about Manchester (*i*) What cotton goods are made at Blackburn? (*j*) To what other trades has the cotton industry given rise? (*k*) Which town in Scotland is famous for sewing cotton? (*l*) In which river valley does it stand? (*m*) What is done with the cotton goods?











R

Public Arms

See of Glasgow
Edinburgh

Stirling
Peebles

X. FISHERIES OF THE BRITISH SEAS

The continental shelf.—The British Isles are set in the midst of the richest fishing grounds in the world, and are therefore the home of the greatest sea-fishing industry. Some 10,000 ships, nearly all of which are steam or motor propelled, take part from points all round the coasts.

The number of fishermen is about 50,000, but the total people depending upon the fishing trade is quite five times as many, if fish merchants, fishmongers, salesmen, hawkers, buyers, cleaners, curers and carriers are included

The chief fishing centre is the shallow water of the continental shelf. The shallowest part is the North Sea, which becomes more and more shallow towards the south. The Straits of Dover are less than 100 feet deep. The floor of the North Sea is broken up by ridges and banks The Dogger Bank is nearly 7,000 square miles and less than 20 fathoms deep. (A fathom is a measure of 6 feet used mainly in sounding or testing the depth of the sea.) If St. Paul's cathedral were placed upon the Dogger Bank, the dome would stand above the level of the water The western edge of the Dogger Bank is only 60 miles distant from the Yorkshire coast. The Irish Sea is a little deeper, and contains pits to the depth of 250 fathoms Deeper water is also found to the south-west of Ireland.

The shallowness of the seas is of great importance with regard to the supply of food for the fish. In deep waters little light is able to pass through, and there is but little life. In shallow waters tiny living plants and animals abound These creatures, spoken of generally as *plankton*, depend for their life upon a certain amount of light, air and the salts of the sea. Plankton is to the life of the sea what green pastures are to the life of the land. Countless small sea creatures feed upon the plankton, and these in their turn form the food of the larger fish.

Kinds of fish.—Fish can be divided into two main groups according to their habits and natural homes.—(*a*) *demersal*—fish that live at the bottom, and (*b*) *pelagic*—fish that live near the surface.

Demersal fish live at or near the bottom of the sea, but their eggs float near the top, mixing with and forming part of the plankton When still young, the fish leave the surface waters and go to the bottom, where they feed mainly on small shellfish such as shrimps, crabs, mussels, sea snails and limpets Haddock, cod, hake and whiting are the chief kinds of demersal or bottom fish.

Pelagic fish live and are caught near the surface The eggs of most of them, the herring for one, are laid at the bottom on rather shallow and rocky ground. The surface fish feed upon plankton. The chief kinds of pelagic fish are herring, mackerel and pilchard.

The shallowness of the seas round the British Isles is of vast importance not only as providing plenty of fish food and thus plenty of fish, but also as greatly assisting the fishermen in their work

Methods of catching fish.—There are four methods of catching fish employed by fishermen round the British Isles Some of the methods are used solely for catching bottom fish and others for surface fish, while some are employed to catch both kinds.

The trawl—The chief method of catching bottom fish is by using the trawl. The trawl is a wide-mouthed cone-shaped bag or net. Its mouth is usually 70 feet wide and its length 110 feet. It is drawn along the bottom of the sea by a boat which travels

at 2½ knots. (A knot is a unit of speed equivalent to 1⅛ miles an hour.) The towing movement of the vessel keeps open the mouth of the net just as the breeze fills out and bears up a kite The lower part of the net disturbs the fish, which rise from the sea bottom Some find their way into the bag and gradually collect at the narrow end Escape is impossible because of a flap a short distance from the mouth This allows the fish to enter but not to come out again. The trawl is let out on warp-wire made of steel of the highest quality. The trawl warp must be able to stand a great deal of stretching and bending without breaking, for it is put to very sudden and heavy strains. Often a mile in length, it is coiled round the drum of a winder. When the trawl is thought to be full enough the warp is wound up and the net hauled on board. The knot at the end of the bag is untied, and the fish—hake, halibut and plaice—fall into an enclosed space prepared for them. The empty trawl is then "shot" again, and the men set to work to clean and pack the fish Some three to four hauls are made daily.

Vessels using the trawl are called trawlers.

The line.—Another method of catching the bottom fish is by means of the line This is the chief method used off the Newfoundland Banks and in Norwegian waters, but is not important in England (See Vol. II, page 465.)

The seine.—The newest method and perhaps the most remarkable one in deep sea fishing is seining. It has been used by British fishermen since 1921 only, but was employed by Danish fishermen before that date The method is making headway as is shown by the fact that vessels are now being specially built for the work.

"Seining differs from trawl fishing chiefly in that the net is moved while the vessel remains still. The boat sails out with a bag of netting fastened to the centre of a hauling rope often a mile long. She chooses her fishing area and here is moored a float called a buoy. To the buoy is fastened one end of the strong hauling rope made of Manila hemp and more than two inches thick The vessel now takes a course in the shape of a triangle, the buoy marking the top of the triangle, and the shortest side of the triangle being opposite the buoy. As she sails she lets out the hauling rope and net, the net being in the middle of the shortest side of the triangle. Returning then to her starting point, the buoy, the ship stops, and the motor-winch aboard gradually winds in the triangle of rope and net The two ropes on either side of the net moving inwards and towards the ship stir up the bottom fish towards the path of the approaching net. When the net is alongside, the fish are baled out with a huge landing net until the catch is small enough for the seine to be hauled aboard."

The drift net—The chief method of catching surface fish such as herring, mackerel and pilchard is by means of the drift net. The net is lowered straight down into the sea so that it hangs as a wall in the path of the fish. A wall of netting sometimes ten miles in length is built up of a number of oblong pieces. They are held up by floats which keep the upper edge some two fathoms below the surface. The meshes or open spaces of the net are an inch across for herring, and larger or smaller for other fish. As the fish drive against the net they push their heads through the meshes beyond the gills which prevent their being drawn back again When the nets are hauled in the fish are shaken out

"The vessels which fish the herring are known as drifters They are small steamboats about 90 feet long and with a speed of 9½ knots. A drifter's crew is ten men, and she generally carries ninety cotton nets, 34 yards long and 13 yards deep. The vessels usually leave port in time to reach the fishing grounds about two hours before dark They then shoot the nets across the tide, the wind taking the vessel away from them This task is sometimes helped by

the vessel's power. The nets are joined together by short lengths of rope

"About dawn the vessels begin hauling in the nets under steam, the nets being hauled over the side into the ship's hold."

The success of drift net fishing depends on the fact that herring, mackerel, pilchards and other kinds of surface fish swim near the surface in great shoals, often containing millions The mackerel and the pilchard live in the southern waters of the English and Bristol Channels The herring come to all parts of the waters around the British Isles. They appear at regular times off the coasts of these islands in large numbers, and after a short stay, during which they lay their eggs, depart. It is an error to suppose that the fish themselves come to settle southwards with the fishing season. Herring of different kinds, appearance and quality spawn or lay their eggs off different parts of the coast at different seasons Thus the Manx herring spawns in September and is rich in fat, the Welsh in November and December and is poor in fat The Hebrides fishery, the centre of which is Stornoway, begins in May, and the Orkneys and Shetlands in June. The fishery reaches Blyth and Shields by mid-July, Grimsby by the end of July, Yarmouth and Lowestoft by early October, and Devon and Cornwall in December.

The drifters "follow" the herring In the early season they gather at such ports as Lerwick, in the Shetland Isles, and Peterhead, in Scotland Later in the season they are at Yarmouth and Lowestoft. Over 1,000 vessels meet at these ports at the height of the season, and as many as forty million herring have been put ashore in one day—nearly a herring per head of the population. The people of the British Isles, however, do not buy all these herring The industry is built upon export trade Fish will not remain fresh for very long It must be sold quickly or cured in some way or other. The herring ports are visited not only by the drifters and their crews but also by girls, usually Scottish, who prepare the fish for pickling and curing. Pickling is the most usual process before exporting It is a state in which the fish remain sound and good for about two years Large pickling establishments are to be found at all the fishing ports of the east coast of Scotland and at Yarmouth and Lowestoft Thousands of girls are employed They go in the early season time to the Shetland Isles, and by November they have reached Yarmouth. The herring are placed in a cleaning trough and the girls clean each fish with a sharp knife, at the same time grading the herrings into three or more sizes. The fish are then packed into barrels in layers and sprinkled with salt, a barrel containing from 700 to 1,200 fish according to quality The herring are left to settle for a day or two, the salt and blood mixing and forming a pickle The barrels are afterwards filled up and again allowed to settle for some days before the final dressing takes place before shipment Russia and Germany have formed the chief markets in the past. Italy and Greece buy quantities of "red" herring which are pickled first and then placed in a kiln where they are smoked

Herring are also preserved by two other methods—(*a*) kipper making, and (*b*) bloater making. In the case of kippers, the herring are cleaned, opened, salted, flattened out and fastened in rows to wooden laths supported on a frame They are then hung in the smoke of smouldering wood chips, usually oak. For the production of bloaters, the herring are salted but not opened, and more lightly smoked

Fishing ports.—The fishing industry to-day is carried on mainly at a few special ports. In the past, nearly every haven and harbour was a fishing port, but very many of these to-day remain old-world places with a few small craft hired to visitors during the summer months These are reminders of the days when the fish were caught close in to the shore and for a market near at hand.

To-day the markets are largely overseas. The vessels are driven by steam power,

which permits them to go much farther afield, and calls for the use of quantities of coal and ice, and for trade in a few centres specially suited to it Docks have been built for the trawlers, special arrangements are made for coal supplies, and ice shoots are provided at some of the ports.

The herrings are dealt with chiefly at Yarmouth and Lowestoft Yarmouth is one of the oldest herring centres of England The fishery was carried on here in the time of Henry I who granted a charter to the town in 1108 There is a good harbour at the mouth of the river Yare, and the banks of the river mouth are lined with wharves and quays Yarmouth has a large fleet of steam trawlers, drifters and motor ships, which is greatly augmented in the herring season in autumn by fleets from northern ports Lowestoft, a few miles along the coast, is a rival of Yarmouth and at both ports a great deal of fish is prepared for export Large quantities, however, immediately on landing are boxed in ice for quick despatch by rail to London, whilst in order to maintain supplies in the shops outside the season many are frozen in blocks of ice and preserved fresh.

The trawler's catch is brought into port either by the ship herself or by a cutter or carrier. The herring ports are trawl ports also, for the herring fishery has its season only, whereas trawling is carried on all the year round

The great trawl port is Grimsby, on the south side of the Humber It has special docks controlled by the North-Eastern Regional Board of British Railways and has a fleet of several hundred ships Hull, on the north side of the Humber, and the second largest trawl port, is older than Grimsby Fleetwood in north Lancashire is the chief fishing port of the west coast, whilst Aberdeen is the great centre of Scotland Other fishing ports of less importance are Milford Haven, North Shields, Swansea and Newport.

Three things are needed for the success of a trawl port—(*a*) satisfactory harbourage, (*b*) nearness to fishing grounds, and (*c*) nearness to a large centre of population

Speed must be used in all dealings in fish - smartness in packing and quickness in delivery to the railway. Special trains called "fish specials," consisting of fish vans only, leave the chief ports once or twice a day for London, Birmingham and Liverpool The fish vans are built so as to keep the fish as fresh as possible. They are well ventilated to keep cool and have stone floors provided with drains. When the train arrives, the vans are unloaded quickly The fish is put into fleets of motor vans and carts drawn by horses, and taken to the wholesale market or direct to the shops The fish landed in the morning is packed and sent off the same day and is on sale in the shops the next morning

The great market for the fish trade is Billingsgate, again a very old one It is well placed to receive supplies either by rail or by water It is on the north bank of the Thames, close to London Bridge, and trawlers and cutters can unload direct into the market It is near all the great railways, in the heart of the city, and roads lead out from it to all parts Billingsgate is at its busiest from three o'clock in the morning. The fish is sold by samples. Most of it does not enter the market but is kept in lorries standing outside in Lower Thames Street. Samples of the fish are taken in to the market and displayed and sold

The Billingsgate fish porters carry the fish boxes on their heads. Their hats are shaped like straw hats, but are made of stiff, hard leather, usually shining with fish scales.

TEACHING NOTES

1. Aberdeen.—Along by the north-eastern coast of Scotland runs a plain on which barley and oats are grown, and cattle pastured. At one part of this plain the Highlands come down almost to the sea, leaving only a very narrow road along which all the coastal traffic has to pass Where the chief river of this strip of land is crossed

stands the city of Aberdeen, and from it railways and roads lead in many directions Here there are large granite quarries in the Highland rocks, and most of the buildings of Aberdeen are made of this rock, thus giving rise to its title of the "Granite City" Aberdeen is the headquarters of the northern fishing fleet, consequently there is a great number of fish-curing factories in the city and one of the largest fish markets in Britain At Aberdeen also there are ship-building yards, engineering works, paper factories and granite-polishing works

2. Inverness.—The Highlands are cut into two by a deep valley called Glenmore—the great glen—which separates the North-West Highlands from the Grampians The sea has entered at each end of this valley, and in the middle are three long lakes, stretching for fifty miles between Inverness in the east and Fort William in the west. The lakes are joined by the Caledonian Canal Inverness is known as the "capital of the Highlands," and guards the eastern entrance to Glenmore There was a castle here in the Middle Ages, and around it many stirring events took place To-day Inverness is a market town and a seaport, it carries on an important trade in cattle, and holds a large wool fair every year Fort William, at the other end of Glenmore, stands at the foot of Ben Nevis, the highest mountain in the British Isles.

3. Milford Haven, in South Wales, is one of the fine harbours of the British Isles In the Middle Ages this port was the starting place for travellers to Ireland, but nowadays they sail from Holyhead, which is reached by a railway crossing a long bridge over the Menai Strait Milford Haven is the chief fishing centre of Wales It is the home of a large trawler fleet, and special trains take its fish daily to many towns including London, Manchester and Cardiff Since it deals with so much fish there are ice works in the town, and about 250 tons of ice are made daily.

4. Public Arms of King's Lynn.—The dragons' heads from which issue the crosses are said to typify St Margaret, the patron saint of the town According to an old legend this saint having been converted to Christianity in her early youth was obliged to flee from her home She became a shepherdess in a far-off land, where she was captured by a wicked lord, and, on refusing to live with him, was cast into a dungeon where she was immediately swallowed by a dragon. St. Margaret, inside the creature which had bolted its food, began to pray, and on making the sign of the cross the dragon burst open and St Margaret escaped

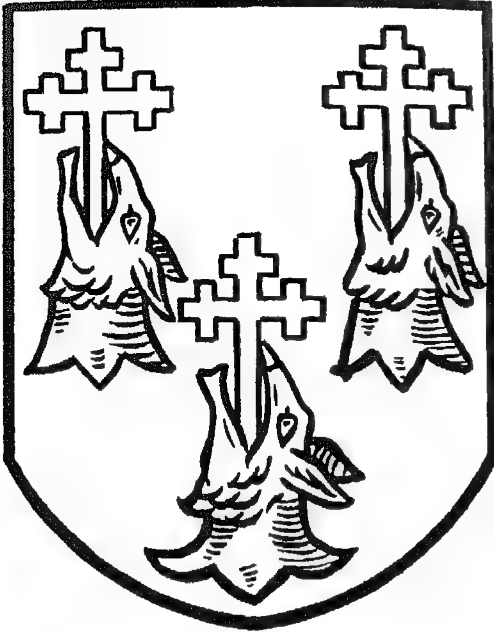
(Further information on Fishing, with illustrations and maps, is given in Volume I., pages 492-501.)

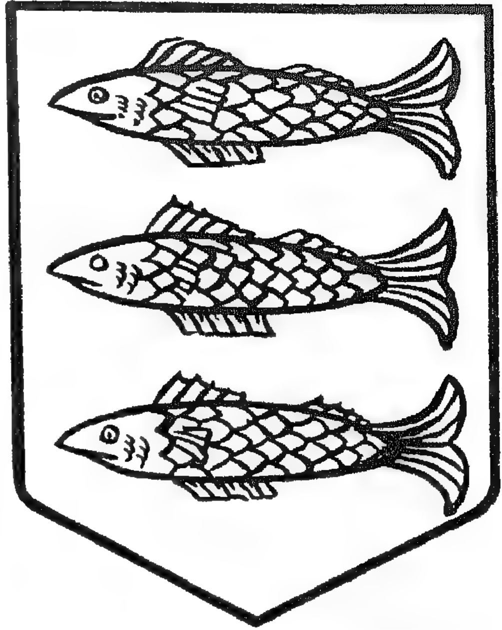
XI. LONDON

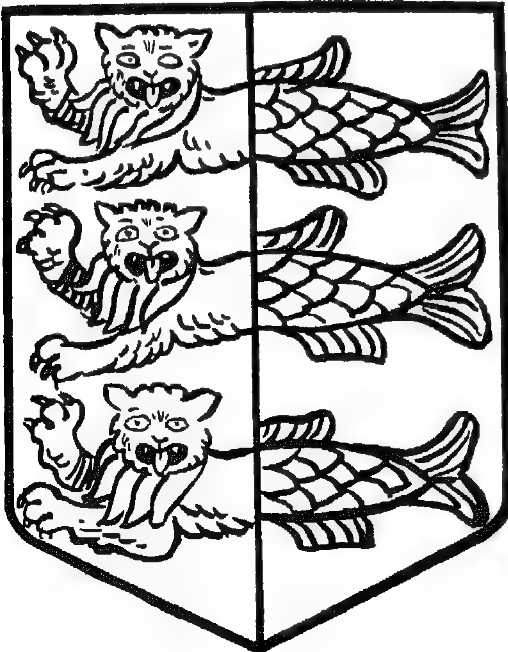
London the monster.—London is like a monster—the most tremendous monster in the world—that has gathered within its grasp a vast tract of country upon which it set its imprint with buildings of concrete and iron girders, of bricks and mortar. Year by year new districts were taken in, and other old landmarks disappeared. Shady lanes and green fields rapidly changed into roads and rows of houses Hollows were filled in and hills levelled down Brooks and rivulets were no longer allowed to sparkle and bubble above ground, but they followed a dark and dreary course through underground pipes The feelers of the monster, in the form of railways and motor roads, pretend to take the Londoner farther and farther into the country, but they really take the town into the country.

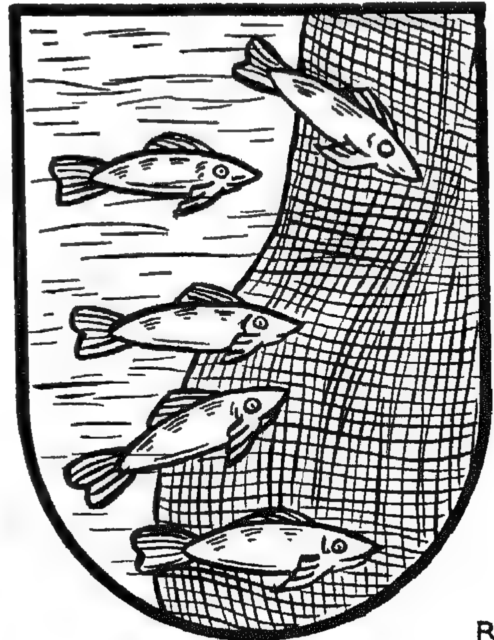
London is a wonderful place, not only for

SKETCHES FOR THE BLACKBOARD









Public Arms

King's Lynn
Great Yarmouth

Kingston-on-Thames
Inveraray



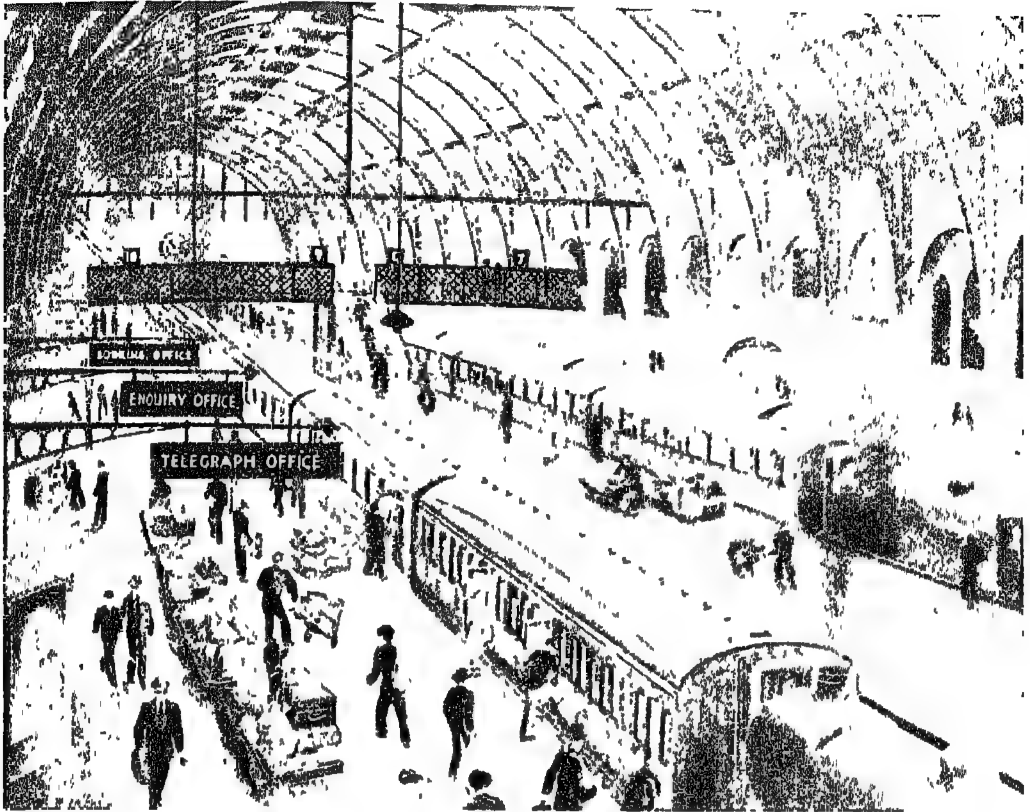
BILLINGSGATE FISH MARKET, LONDON
(Class Picture No 112 in the portfolio)

its size, but also for the many different kinds of work done in it As a road and rail centre it is linked with all parts of Great Britain By its steamship lines, its airways and its telegraph system it is linked with all parts of the world It is a meeting point for land and sea routes, and this has led to its becoming a market and a port, and therefore a great manufacturing, banking and business centre also

London is not all these things alone, however London is a capital—a centre for law making—and its importance is worldwide, because it is the greatest city in the world

Reasons for London's greatness.—To what is the greatness of London due? What advantages have made London what it is? How did its site come to be chosen? Why has its importance never gone down, but grown ever greater with the passing of time? The answers to these questions are to be found very largely in the position, climate and soil of the London district.

The capital of the British Isles lies in the far south-east corner of the islands. It does not stand in the centre of the country as do Berlin and Madrid Why did neither Birmingham nor Liverpool, both more central than London, rise to become the capital? The answer to this question may be found in the fact that until coal began to be used for steam power England was not a manufacturing country, and northern England had not a large population Most of the people



A Railway Terminus

(Class Picture No 113 in the portfolio)

lived in the south and east, where the soil and climate were more suited to crop growing than in either the north or west. Another important reason why the capital came to be in the south-east was because that part of England lay near the continent of Europe The Thames was the main gateway into Britain from the continent London grew up at the point where the river mouth narrowed.

London's earliest importance lay, however, not in its being a port, but a crossing place on the Thames We find in Roman times that a settlement was made at the point where the river could be forded, and later the ford gave place to a bridge built slightly lower down the river. To the Romans the Thames was a barrier between the land lying to the north and the land lying to the south. The river had to be crossed, and the easiest crossing could be made at London All the main Roman roads spread outwards from London The chief road from the continent led from the different ports along the Kent coast to Canterbury, and thence through Rochester on to London After crossing the river the roads ran (1) northwards—the Ermine Street, (2) north-westwards—the Watling Street, and (3) westwards to Staines, Silchester and Bath

The choice of the actual site of London was settled by the position of two hills, the

first high ground close to the river on the north bank These hills rose about fifty feet above the flood plain of the Thames, and on them to-day stand St Paul's cathedral and Leadenhall market. The hills provided dry ground, and could easily be defended from attacks by enemies. Moreover, two streams, the Walbrook and Turmill brook, and many small springs rising from the gravel hill slopes, provided a plentiful and good water supply A wall was built round the city to protect it The wall had many gates, and their names remain in London to this day—Aldgate, Bishopsgate, Moorgate, Cripplegate, Aldersgate, Newgate and Ludgate

The Romans laid the foundations of modern London The making of the roads turned London into a great route centre. The building of the bridge gave it a second importance—that of a port Sea-going vessels no longer sailed up the river farther than London Bridge, and London port grew up below the bridge. Modern London Bridge stands near the site of the old Roman bridge.

The coming of the Romans brought England into regular dealings with the continent. This intercourse almost ceased during Saxon times, but began again after the Norman conquest.

During the Norman period London developed rapidly There are rich remains of this period, such as the famous Tower of London, Westminster Abbey, parts of the Temple church, Bow church and Southwark cathedral. The first stone bridge was built across the Thames in the twelfth century, and its importance should be fully realised It became the meeting point for the peoples of Kent with those of East Anglia, and the meeting point of water routes in two directions on the river. The bridge was sixty yards lower down the river than the present bridge, which was begun in 1825 It had a chapel in the middle and two rows of houses One house was for a time the residence of the lord mayor.

London had near it the part of England that was most important in those days. The navigable and commodious Thames was also then, as now, close to a busy part of Europe Facing the river, on the continent, the Scheldt and the Rhine, both great highways for early trade, helped in the development of London, and the Thames was also in touch with the early routes which used the English Channel.

During the Middle Ages London was the great port for the export of raw wool and cloth

The building of wharves and quays took place as the port grew larger. Directly behind the quays lay the markets and warehouses The names of streets and wards in the city to-day tell of the traffic and industry of past ages—Cheapside, Eastcheap, Cornhill, Vintry, Bread Street, Friday Street, Poultry. (The old word "chepe" meant *market*) The chief London markets of to-day are as follows:—

Markets of London.

Smithfield .	meat, poultry, fish.
Leadenhall .	poultry, game.
Baltic . .	grain, oils.
Mark Lane .	grain, peas, beans, lentils.
Mincing Lane .	tea.
Billingsgate .	fish
Hatton Garden .	diamonds.
Wool Exchange .	wool
Covent Garden .	fruit, vegetables, flowers.

Since the Middle Ages the port of London has grown tremendously. After the great discoveries of new lands in the fifteenth and sixteenth centuries men went out and settled in countries overseas, and London came to trade more and more with them. The port of London has grown larger below London Bridge At first the boats unloaded their cargoes at the wharves and quays along the river side, but when bigger ships came to use the port in greater numbers, large docks or basins had to be built out from the river banks to provide shelter for

them The soft soil of the banks and the London clay made the work of building the docks fairly easy. The trade of the port of London has passed through four stages, (1) luxuries—very costly goods, (2) semi-luxuries—less costly and more generally needed than the first kind of goods, (3) bulky goods, and (4) machinery. The docks are specially used for one or the other of these kinds of goods The oldest docks stand nearest London Bridge.

Position and trade of London docks.

	Dock.	*Distance in miles from London Bridge.*	*Goods.*	*Name of country sending goods*
I	St Katherine, 1820 London, 1805	1 1½—2	Spices, gems, ivory, wine, wool	East Indies — spices Portugal, Spain, France—wines Australia, South Africa, New Zealand—wool
II	West India, 1802.	3½	Sugar, rum, tobacco.	West Indies, Mauritius.
	East India, 1806	5½	Sugar, carpets.	West Indies, the East (carpets)
III	Surrey Commercial, 1805	2	Timber, grain	*Timber*—Sweden, Norway, Finland, Poland, Russia, Canada
	Millwall, 1864.	4	Timber, grain	*Grain*—Canada, Argentine, U S A, India, Australia.
	Royal Victoria, 1855	6	Fruit, meats.	*Meat*—Argentine, New Zealand, Australia
	Royal Albert, 1880	6	,, ,,	*Fruit*—Australia, New Zealand, S Africa, Spain, Italy, France
	George V., 1921	9	,, ,,	,, ,,
IV.	Tilbury, 1931.	26	Machinery export and passengers.	

THE DOCKS OF LONDON

The docks do not deal with the whole of the goods entering the port The employment of river policemen and the building of up-to-date wharves and warehouses have made London river as important as the docks The wharfingers who own the wharves have fleets of steel barges called *lighters* which carry goods to the warehouses from ships lying in the river, and also from ships in the docks.

London as a road centre.—The great market behind the port prevents its trade from going down, but that market would not have become so great nor be always growing greater unless the port were well linked up with it. The Romans made London a road centre and it has remained so down to the present day The rise of motor transport has added greatly to the value of the roads in modern times Some of the Roman roads are still used, and other roads have been made to meet the needs of the ever-growing streams of traffic.

The Kent Road, leaving south-east London, leads to Rochester and beyond Canterbury to the Kent coast

The Edgware Road runs north-west into the midlands as the Watling Street

The Mile End Road, crossing the Lea at Bow, makes for Chelmsford and Norwich

The Bishopsgate and Kingsland Roads pass north along the gravel plain overlooking the Lea, and become the Great North Road to York and Edinburgh

Oxford Street leads west to Uxbridge, Oxford and Worcester

Piccadilly runs west to Hounslow and Maidenhead, and from there (*a*) to Bath and Bristol, and (*b*) to Staines, Winchester and Southampton

London as a rail centre.—The railways are of great importance to London As in the case of the roads, London is the centre of the railways. All the railways end on the outskirts of the city. The lines run in all directions, and gaps through the Chiltern hills

Main Railways centring on London.

Railway	*Terminus*	*Route*	*Gap*
B R Eastern and North-Eastern Regions	Liverpool Street	(*a*) Ipswich, Norwich, Yarmouth	
	,,	(*b*) Cambridge, Ely, King's Lynn	
	King's Cross	Peterborough, Grantham, York Newcastle, Scotland	Lea valley
	Marylebone	Aylesbury, Rugby, Leicester, Nottingham, Sheffield, Manchester	Misbourne
B R London Midland Region	St Pancras	Bedford, Leicester, Derby, Leeds, Carlisle	Lea valley.
	Euston	Rugby, Stafford Crewe, Carlisle	Lea valley
B R Western Region	Paddington	(*a*) Princes Risborough, Banbury, Birmingham, Shrewsbury, Chester, Birkenhead	Wye valley
	,,	(*b*) Reading, Bristol, Exeter, Penzance	Goring
B R Southern Region	Waterloo	(*a*) Basingstoke, Salisbury, Exeter	Wye valley
	,,	(*b*) Guildford, Portsmouth	
	Charing Cross	(*a*) Reigate, Brighton	
	,,	(*b*) Sevenoaks, Tonbridge, Hastings	
	Victoria	(*a*) Ashford, Folkestone.	
	,,	(*b*) Chatham, Dover	

and South Downs provide easy ways through to the districts lying beyond

In addition to the main railways, there are underground railways or "tubes" Altogether there are some 700 railway stations on Greater London Trams and motor-omnibuses run in all directions, and thousands of taxi-cabs ply for hire It is calculated that by train, 'bus, or other public conveyance some 4,200,000,000 passengers travel in Greater London during a year The present population of London is well over eight millions

On the east and south-east coasts are numerous watering-places which serve as holiday centres for thousands of Londoners The largest of them is Brighton—"London on Sea" as it is often called—and others of importance are Southend-on-Sea, Margate, Ramsgate, Broadstairs, Eastbourne, Folkestone and Hastings.

London's continued growth.—As London has grown in importance and its industries have become greater in number so its population has grown also At first the people lived within the walls of the city Beyond the walls lay scattered villages which had settled upon the gravel patches where good water supplies could be found As London grew, it gradually spread beyond the walls, and village after village was swallowed up in the growing town. Two things have greatly aided the spread of London—engineering and improvements in transport

Engineering—Through this work the city has been given an excellent water supply and proper drainage The moisture has been drawn off from marshy districts around, so that it has been possible to build upon them The water supply of London has been taken from many different places. It

came first from the springs and streams gushing up out of the gravel, but with the growth in population these became impure. The river Thames itself was then used, but this also became unfit to drink. The water is now brought from streams at a distance, such as the Lea and the New river, and it is also drawn from artesian wells sunk to tap the water supply underneath the chalk layers

Improvements in transport.—Quick transport allows the population to live outside the city and travel to town daily from districts thirty miles and more away, transport, too, assists industries and factories to grow up on the main railway lines and roads near London as well as along the Thames.

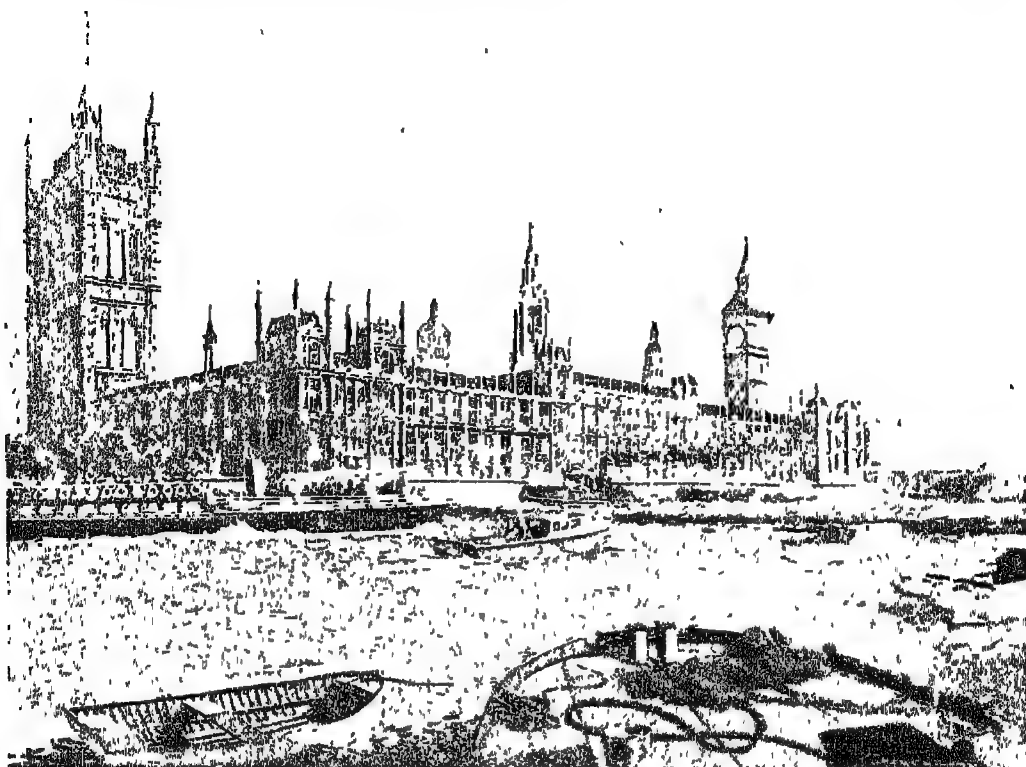
The north-east and south of the city in particular are given up to manufactures London is the greatest manufacturing city in the British Isles It has no special industry Its workers are employed for the most part in many different trades which wait upon the needs and luxuries of a great capital London's importance as a great manufacturing town has been achieved through having at hand a large supply of raw material drawn from all quarters of the globe Engineering, electrical and motor car manufactures, leather, soap, sugar, confectionery, preserves, rubber, paper, chemical, glass, oil, furniture and timber works are but a few of those that could be named The factories lie mainly to the east of London Bridge in touch with the docks and wharves of the river The west end of the town is the home of the lawyers, doctors, architects and the professions generally. In the centre and towards the east of the city are the great printing and publishing establishments, and in the same area are the markets for meat, fish, fruit, vegetables, flowers, grain and other commodities

Along with its growing trade there was also a growth in the wealth of the city. This depended in the first place on London's geographical position, and afterwards on the riches of its merchants, their knowledge and their fame, which finally made London the leading money market of the world. The Mint, the Bank of England and the Royal Exchange tell of the great power of London's money.

The city is the place of business. Eastward from it is the port with its line of great docks stretching from London Bridge to Tilbury and Gravesend. West of the city lies the law-making centre of the British Isles and the British Empire—Westminster, with the Houses of Parliament, government offices and royal palaces Westminster grew up as a separate city Between the city of London and the city of Westminster is an area now largely used for the carrying-out of justice and the study of law—the Law Courts and the Temple. To the north and west of Westminster private residences have been built Here also are the centres of art, learning and science in Britain, and here therefore are the nation's treasure houses—the British Museum and the National Gallery.

Outside all a vast ring of towns called suburbs spread so deeply into the countryside that the time has now come to cry halt. Plans for the reconstruction of large areas of the city devastated in the recent war include the building of satellite towns well apart from London but linked by broad commercial highways Provision for new industries and homes for workers in healthy uncongested surroundings will thus be ensured.

Links between north and south.—The first bridge across the river was made by the Romans To-day numerous bridges span the river, making London the focus of the routes. The Tower Bridge, unique in design, is the first seen in going upstream It is "emblazoned in gold with the arms of the city," and guards the Pool of London. Since it was built in 1894 it has been the busiest of all London's bridges The towers at each end of the bridge are joined by a footbridge 114 feet above water level, and passengers can be taken up to this footbridge by a lift in either tower, but it is seldom used, for it takes no longer to wait

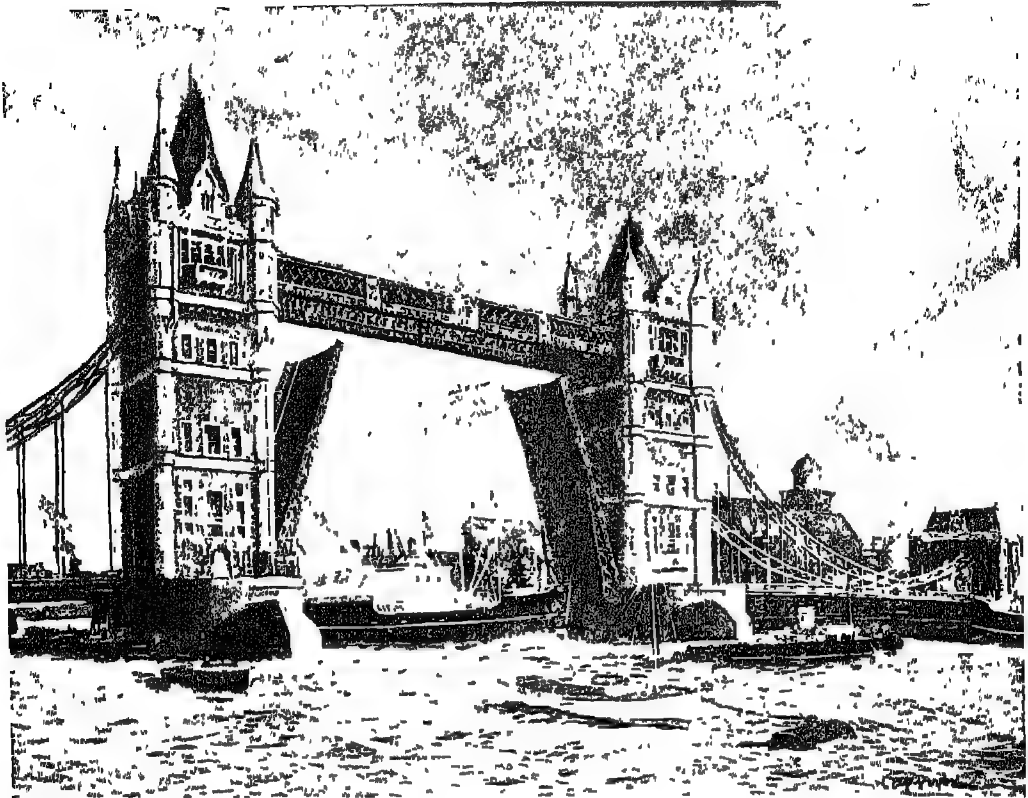


THE HOUSES OF PARLIAMENT, LONDON

(Class Picture No 114 in the portfolio)

while the bascules of the bridge are raised and lowered than to cross by the upper bridge From the footbridge may be seen a wonderful view of the City and the Pool of London, full of cargo-vessels, barges, liners and tugs The bridge is opened to ships often twenty times a day. The ship approaching sounds its siren and signals to the superintending engineer. "The road-post man clangs his bell, policemen wave back the traffic The 'all-clear' signal is given from the farther side of the bridge, and instantly there is a rumble of engines below The bridge opens and parts in mid-air. The hundred-foot roadway shoots up aloft, and in less than a minute the bridge-ends lie flat against the tower walls The ships pass through In three minutes the bridge-ends fall to earth again and are clamped and bolted together . . . Day in and day out, through fog, rain and shine, the Tower Bridge sees our ships in and out of port"

Near the Tower Bridge is London Bridge, and then follow Southwark, Blackfriars, Waterloo, Westminster, Lambeth, Vauxhall, Victoria, Albert and Battersea bridges. In addition there are bridges used only by railways. Two important tunnels for road traffic link the two banks, one at Blackwall and the other at Rotherhithe. There are also subways for pedestrians only, and tunnels solely for railways. A ferry service has been established at Woolwich for conveying passengers and vehicular traffic across the river. It is interesting to notice



THE TOWER BRIDGE, LONDON

(Class Picture No 115 in the portfolio)

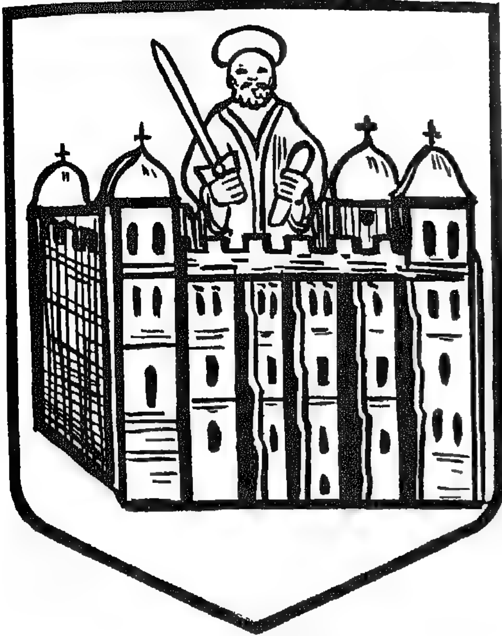
that at a few points the old ferryman still plies his trade, conveying passengers from one bank to the other

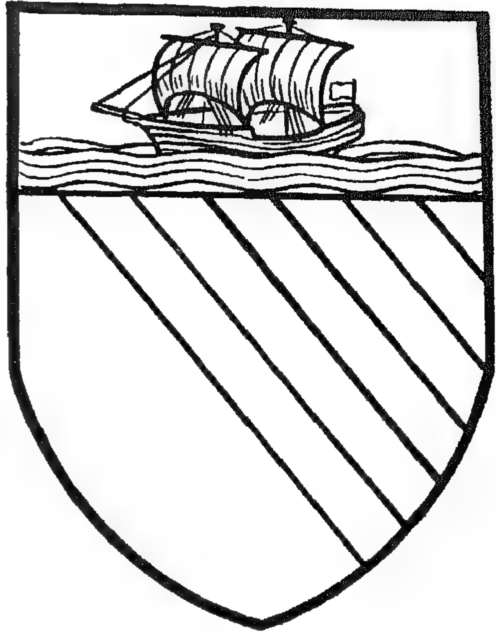
(For notes on some important buildings in London see "General Knowledge," Vol VI.)

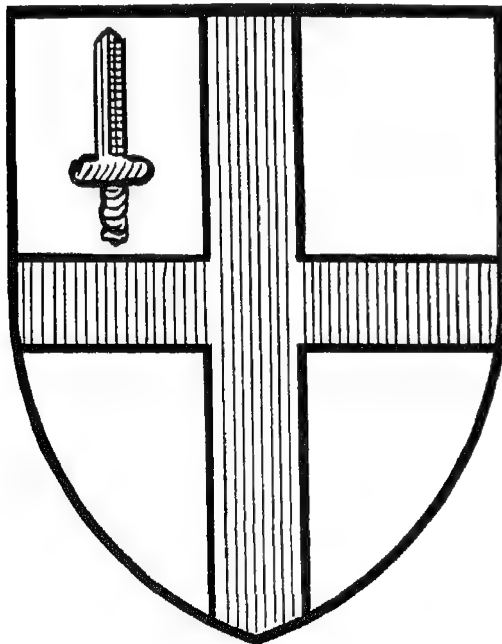
TEACHING NOTES

1. The use of the tide.—The Thames is a tidal river and two advantages are the result The increased depth of water obtained at high tide is good for shipping. The deeper the river the larger is the type of ship that it can accommodate. The ebb and flow of the tide help boats in their movement down and up the river. This is not merely an advantage for the small type of boat which relies on the wind or on human muscles for its motion, but is a great aid to the large steamships. Vessels usually enter with the tide and go out with the tide A smaller consumption of coal is therefore necessary, owing to the aid given by the moving water

It is important to notice that boats can enter and leave the docks or berth at the wharves of the river banks only round about the period of high water. There is thus great activity at the entrances to the docks twice each day









Public Arms

Port of London Authority
City of London

Manchester
Liverpool

2. Gravesend.—Gravesend, which is almost opposite Tilbury, plays an important part in the work of the port of London It is the pilot station, outpost for the customs authorities, and a tug centre. A boat passing down the river must be in charge of a river pilot or of an officer of the boat possessing the river pilot's certificate Pilots in charge leave at Gravesend on the down journey, or board the boat there on the up journey. On entering the river a report has to be made to the customs officer concerning the port from which the ship has come, and the health conditions of the crew and passengers carried Passengers at Gravesend are usually required to show their passports to the customs officers. The boarding of the boat for search for contraband or excisable articles is usually done at the docks. The tugs seen at Gravesend are sometimes required for towing large boats to the dock entrance.

3. Markets.—Early trade was largely centred in markets, and the good position of London for their establishment accounted for the large number which had an early start Many of these have persisted to the present day. The first sheds for Covent Garden were built in the seventeenth century and since that time the importance of this market has steadily increased In connection with markets it is interesting to refer to the type so common in congested areas of London and its suburbs It is represented by the markets held in such places as Middlesex Street and Houndsditch Middlesex Street and a side turning, Wentworth Street, formerly known as Petticoat Lane, on Sunday mornings are crowded with people, mainly those of the poorer class, and the streets are lined with barrows displaying almost every possible type of commodity.

4. Transport in London.—The dweller in London is familiar with the conditions that exist, but those who have never seen the great city find it difficult to realise what things are like. It is important that all types of general transport should be clear.

(*a*) By road—tramcars, omnibuses, motor cars, motor lorries and horse-drawn vehicles are used.

(*b*) By rail—trains above ground driven by steam and electricity, and also driven by electricity through *tubes* or tunnels underground, are used.

(*c*) Water, gas and sewage are transported through pipes underground

(*d*) Electricity is transported through wires both underground and overhead.

5. Public Arms.—The sword in the Arms of the City of London is a badge of St. Paul, the patron saint of London The figure of St. Paul is represented above the Tower of London in the Arms of the Port of London Authority.

6. Memory work.—(*a*) London is linked by road and rail with all parts of Great Britain (*b*) London is linked by shipping, airways, wireless and cable services to all parts of the world. (*c*) It is a port, a market and a great manufacturing, banking and business centre. (*d*) The greatness of London is due to its position, soil and climate. (*e*) The Thames is the main gateway into Britain from the continent of Europe (*f*) South-east England used to be the most thickly populated part of the country (*g*) The Roman roads made London a great route centre, and the building of London Bridge helped to make it a port (*h*) Ships unload at the docks, and also at the wharves and quays along the river banks (*i*) Factories and warehouses line the banks of the Thames in the London area (*j*) Central London is the place of business; to the east lies the port of London and to the west lies the city of Westminster where the Houses of Parliament stand (*k*) The main railways of Britain start from London (*l*) Underground railways pass beneath London in all directions. (*m*) Great markets for fish, fruit, meat, vegetables and grain are found in

London (*n*) The workers of London live in the suburbs around, and travel to the city daily by train, tramcar and omnibus

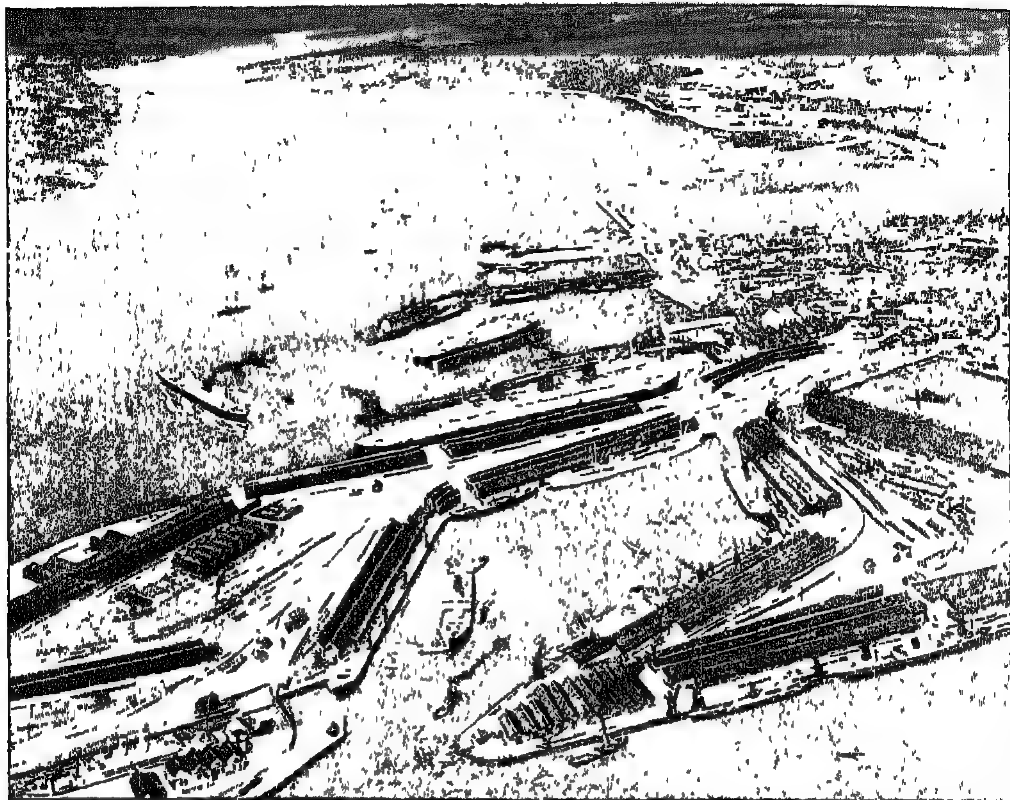
7. Exercises.—(*a*) Give as many reasons as you can to explain why London is a wonderful city. (*b*) What advantages have helped to make London so great? (*c*) How did its site come to be chosen? (*d*) Why has its importance never gone down? (*e*) Tell all you know about the Roman roads (*f*) What names in the city remind us of past days? Explain why (*g*) Tell about the great markets of London. (*h*) What was the chief trade of the port of London in the Middle Ages? (*i*) Where can ships unload their cargoes? (*j*) Tell all you know about the London docks. (*k*) Make a list of the chief imports of London. (*l*) What are "wharfingers" and "lighters"? (*m*) Tell of the great railways that run from London, and, if you can, draw a sketch to illustrate your answer. (*n*) How does London obtain its water supplies? (*o*) Tell of some of the different kinds of work done in London (*p*) What famous buildings may be seen there? (*q*) Which is the law-making part of the city? (*r*) Where do most of the workers of London live? (*s*) What places in London would you like to visit?

XII. THE TRAFFIC OF THE BRITISH SEAS

The British Isles the centre of the Modern World.—The British Isles lie in high latitudes 50°—60° in a region of wet maritime climate where conditions favour manual work throughout the year We have seen in previous chapters that the nature of the work of the people falls into one of three groups i e associated with agriculture, manufactures, or fishing In the past the agriculturalists formed the bulk of the population, to-day, the industrialists far outnumber the agriculturalists and the fishers. This change in the work of the people has come about during the last hundred years. The reasons for this change have been already discussed, but they can be summarised briefly as (1) the abundance of coal and iron, (2) the accessibility of these minerals, (3) the results of the experiments and inventions of a number of Britons, (4) the lead England took in the field of industry in the nineteenth century, a lead which has given her a prominent position in the markets of the world to-day, (5) the efficiency of the labour in the factories, which efficiency is due to the skill derived from long experience in the industries.

This widespread industrial development has outgrown the agricultural possibilities of the country. The industrial population can no longer be fed from the produce of the land of the British Isles Large supplies of food have to be imported from various parts of the world These foods are paid for with the results of the labour of the industrialists. Much time of the industrialists is spent, not in making goods to be used by the people in the British Isles, but to pay for the goods we cannot produce within our own islands For not only has food to be imported, but many of the industries, e.g. cotton, woollen, and iron, are dependent on supplies of raw materials obtained from abroad Thus there is set up a movement of goods into and out of these islands, i e trade between these islands and the rest of the world.

The British Isles are happily placed in the Modern World for the carrying out of the exchange of commodities. Before the Age of Discovery the islands were merely an outlying fragment of the World of Civilisation, far away from the centres around the Mediterranean. The exploration



LOOKING DOWN ON SOUTHAMPTON DOCKS

(Class Picture No 116 in the portfolio)

of the world—the discovery of the New World, the opening up of Africa, the discovery of the southern continent of Australia—has altered the value of the position of the British Isles. They are no longer on the outskirts, but have become the centre of the land hemisphere at one of the great focal regions of world routes.

The southern and eastern shores of the islands face the continent of Europe, a region like our own islands of great development, and possessing a dense population offering a market. The western shores face the Atlantic, and by means of that ocean—now no longer a barrier but an open way—the British Isles have access westwards to Canada and the States, south-westwards to South America, southwards to Africa, eastwards via the Mediterranean to India, the Far East, Australia and New Zealand.

The importance of the shallow seas.—We have already seen that the shallow seas around the British Isles are valuable fishing grounds They are even more valuable in providing an easy way on all sides for ships From the west the approach from the Atlantic is by the English Channel into the North Sea, the St George's Channel into the Irish Sea, the North Channel into the Irish Sea, and to the north of Scotland a way between the Shetlands and the Orkney Islands into the North Sea

The islands have a long stretch of coastline extended by peninsulas and headlands with arms of the sea running far inland, e g the

Bristol Channel, the Clyde estuary, the Thames estuary, the Humber, and the inlet of Spithead and Solent. Along this stretch of coast there is an abundance of suitable places for ports. In the past small ports functioned all around the islands, but to-day, under modern trade conditions, traffic has tended to concentrate at a few places whose geographical conditions give them advantages over the others

The shallowness of the seas influences the movement of the waters. These shallow seas which cover the continental shelf are really an invasion by the oceanic waters, and here the movement of waters is more vigorous than in the deeper sea

"In no small degree Britain owes to the submarine platform the currents and tidal fluctuations which have shaped the detail of her coastlines, increased the value of her estuarine harbours, contributed to the motive power of her shipping, and determined the position and seasons of her fisheries" The rhythmical rise and fall of the level of the water—the ebb and flow of the tide—which is characteristic of the continental shelf and the shallow seas is imperceptible in the ocean "Twice a day the tides convert the lower reaches of most British rivers into arms of the sea. The estuaries are generally so shaped as to concentrate the tidal energy on a steadily narrowing front, with the effect of magnifying the tidal rise and fall for some distance inland." This fluctuation keeps the channels clear by preventing them from silting up.

The Narrow Seas by their characteristics of shallowness and movements and by the numerous entries into the land have greatly assisted the British Isles in their commercial development At what points along the coasts are the places for loading and unloading? Whilst the ships are discharging their cargoes and taking on new loads they need to be protected from the full force of wind and waves. In the old days, when the vessels were small, any sheltered cove, bay or creek gave the required protection, and so long as the ships remained small and their cargoes were disposed of in the immediate vicinity, ports were many and small. But under modern conditions, with the increase in the size of vessels, and the increase in the amount of goods handled, and the improvements in inland communications, it is found to be much more economical to concentrate the traffic at a few places. These new places are large enough, and so well equipped, to be able to handle vast quantities of goods with rapidity and efficiency. The large modern ports have grown up at points with particular geographical advantages and where there is need for them, i e. where there is a large population that is requiring much raw material and foodstuffs and is producing manufactured goods for export.

Essential requirements of a modern port.—

1. *Approach to the port.*—A good depth of water must be available at high and low water to permit large ocean vessels to come up at all times to the port In the bigger estuaries the channels are kept clear by tidal scour to take most vessels, but for the exceptionally large liners, it has been necessary to increase the depth of channels by dredging, e g Clyde, Mersey, Thames.

2 *Safe anchorage whilst carrying out the operations of loading and unloading.*—The larger ships do not anchor at the wharves at the river side where they are liable to break their backs with the falling tide. Moreover, if they anchor in mid-stream, they cause congestion to traffic on the river. Therefore, in regions where the range of tides is great, ships pass into basins or docks at high tide, the dock gates are then closed, so that with the fall of the tide the water in the dock does not fall London, Hull, Liverpool have many acres of docks, which have been carved out of the soft alluvial land adjacent to the river.

3 *Equipment.*—There must be efficient machinery,—cranes, etc.—warehouses, transit sheds, for the quick loading and unloading of cargoes

4 *Easy access to the hinterland*—It is of no use being able to get goods to the port without being able to dispatch them easily overland A prosperous and near hinterland is a necessity to a modern port Good means of communication by road, rail and water are also necessities, e g Fishguard and Plymouth are excellent harbours but their hinterlands are sparsely populated, Liverpool, Hull, Glasgow, and London have a dense population near at hand

Some noted ports.—

London—Throughout historic times the great port of Britain has been London Situated in the south-east of the island, in the region most favourable for agriculture and therefore the most densely populated, facing the continent of Europe, London grew at an early date as the point through which trade passed To the town at the head of the Thames estuary ships sailed from the continent laden with wines, cloth and spices, and ships returned to the continent laden with raw wool and barley As new lands were discovered and trade with them arose, London was ready to take an active part in it, and there was in the south-east a large market for goods. So there came the ships from the West Indies laden with sugar, rum and tobacco, and ships from the East Indies laden with spices and tea. Then, later still, from Canada, Australia and New Zealand came wheat, wool, meat and dairy produce together, in later years, with fruit Large quantities of timber come into the port from Canada and Scandinavia The cargoes of the ships visiting the port of London are varied, though the emphasis tends to be on the side of food stuffs. From London, too, certain commodities are re-exported, either coastwise to other ports of the British Isles or to Continental ports, e g wool and tea Two-thirds of the trade of London port is on the import side, one-third only of the trade is exports, among which machinery and manufactured goods are the chief factors.

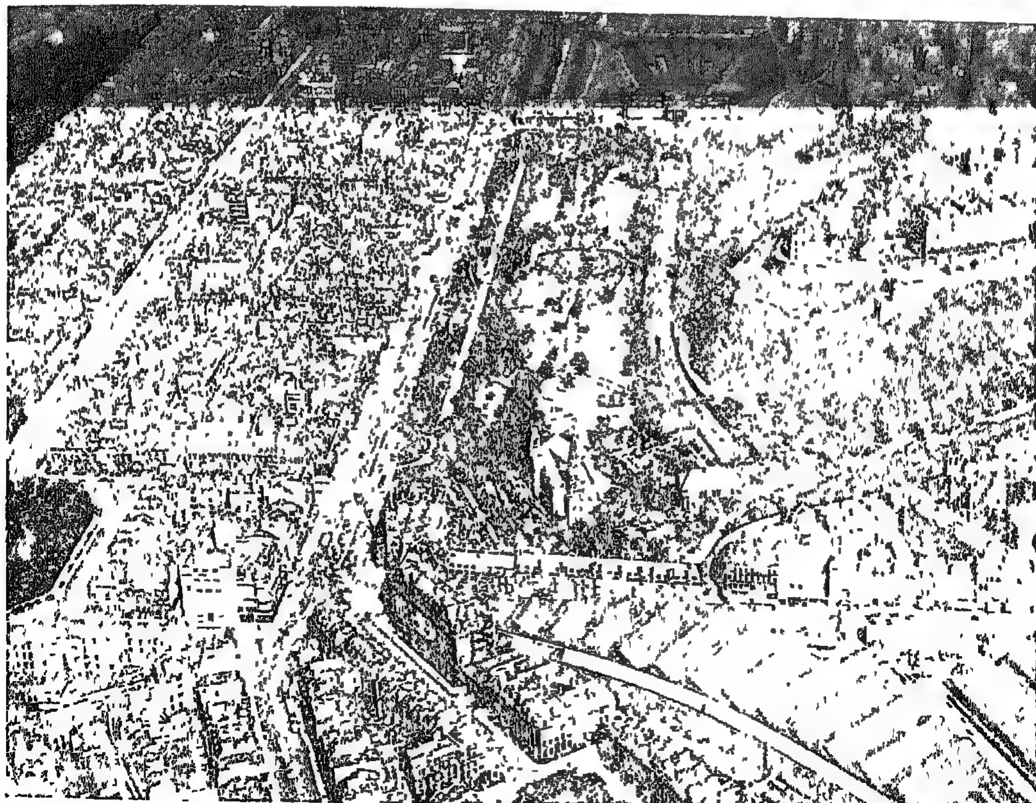
Hull—Another port where cargoes are of a general nature and where imports are in excess of exports is the port of Hull Total activities place it third of the ports of the British Isles, London and Liverpool holding first and second place respectively. Hull is also an old port, growing up upon the sides of the small river Hull where it flowed into the Humber When ships were small the creek provided them with shelter With the increase in the volume of trade and in the size of vessels, Hull has found it necessary to construct docks along the Humber front In early days the excellent network of natural waterways of the Ouse-Trent basin gave the port access to the vale of York and Derby and Notts With increased traffic these natural ways were improved and supplemented by a canal system, and later by the railway, so that to-day the port has excellent communications with its hinterland Hull did not rise to become a great port until its hinterland, especially the coalfield of Notts, Derby and Yorks, developed, and industries sprang up and expanded and led to an intense concentration of people in the area Industries and people had to be supplied, the industries with raw materials—mainly wool, iron ore and pit props—the people with food The inlet and outlet was eastwards to Hull, although there is a tendency for partly manufactured goods to go out via Liverpool.

Hull is conveniently situated for trade with the northern part of Europe From Scandinavia comes timber required for the mines, from Russia timber, hemp, flax and grain, from Canada and India wheat, from Denmark and Holland dairy produce. Hull, too, by the coastwise route is easily accessible from London through which large supplies of raw wool are obtained. A wool market has now been set up at Hull and to an increasing extent wool now goes direct from Australia to Hull without passing through the wool market of London Oil seeds bulk largely in the imports, this is due to a demand for oils in the textile industries and a market for oilcake in adjacent agricultural areas

Newcastle.—Farther to the north there is a group of ports associated with the Tees, Wear and Tyne mouths and in proximity to the Northumberland and Durham coal-field. They all look east to the north of Europe, and the character of their trade is similar The chief is Newcastle Newcastle stands at the meeting place of natural roads: (1) The plain road into Scotland from York crosses the Tyne. (2) The road from Carlisle comes in from the west by the Tyne Gap (3) The sea roads communicate with the continent and London

Newcastle is a bridge place—a meeting place of land and water routes The river below the bridge is widened and deepened and really forms one large natural dock Early activities of the port were associated with the shipment of coal to London and other east coast ports, and later to the continent This traffic is still carried on, for the Northumberland and Durham field is second only to the South Wales field in the coal export trade The imports consist mainly of Swedish iron ore, and pit props from the coniferous forests of Scandinavia and northern Russia.

Leith.—Scotland has only one important general port on the east coast—namely Leith, the port of Edinburgh. Originally a small natural harbour, it has now been improved and extended, and possesses a series of six docks Trade is again almost



[*Photo* Central Aerophoto Co, Ltd.

LOOKING DOWN ON EDINBURGH

entirely with northern Europe—grain, wood and esparto grass (required for the paper works of Edinburgh). The chief exports are the products of the Central Lowlands—pig-iron, coal and ammonia

(For notes on Edinburgh see "General Knowledge," Vol VI)

Bristol—The ports on the west of the British Isles came into being at a much later date than London. They rose to importance with the opening up and development of the lands across the Atlantic. To-day four ports dominate the west—Liverpool, second to London, Manchester, Glasgow and Bristol Of these four Bristol is the oldest, but to-day of least importance. Its earlier rise was due to the fact that it lay to the south-west in a more hospitable and therefore more populated region than either Liverpool or Glasgow Moreover, there was an easy route by means of the Kennet valley into the Thames valley, and so to London. Its earliest trade (possibly in Norman times) was with Ireland, and its sailors engaged in the fisheries to the north of that coast Later, when England held possessions in France, the wines of Bordeaux found their way into this country via Bristol. The great impetus to Bristol's trade came with the discoveries of the New World. West Indian trade in sugar, rum and tobacco, and slave trading were all remunerative, and in the seventeenth century Bristol was the third largest town in England. To-day the West Indian trade still continues, sugar comes in and is refined in Bristol refineries, tobacco still comes and is manufactured for markets, cocoa from West Africa has given rise to a chocolate industry, and normally the banana trade of Jamaica is centred in Bristol Modern conditions have necessitated the improvement and enlargement of the port, so that docks have been constructed at Avonmouth Bristol was outstripped by the other two western ports during the nineteenth century, when their hinterlands were industrialised

Glasgow—In its early days Glasgow functioned primarily as a bridge place on the Clyde, and as a market town for the rich soils of the Clyde valley. There was a certain amount of intercourse with Ireland, but it was not until trade with America began that the town developed as a large port. Then the town was well situated to supply the needs of the Central Lowlands of Scotland, and the river Clyde, unsatisfactory for big ships, had to be deepened, widened and accommodated with docks The chief commodities at first were tobacco and sugar—still imported and prepared in Glasgow factories. These were later surpassed by the imports of raw cotton from the West Indies and southern states of U S A. The import of cotton laid the foundations of the textile industry of the Clyde valley and local supplies of coal were near at hand. The trade of Glasgow is still very largely with America, though a certain amount finds an outlet eastward through Grangemouth

Liverpool—The greatest port on the west is Liverpool, now second only to London in total trade, though surpassing that city in the volume of its Atlantic trade.

What are the factors which have enabled Liverpool to surpass the other ports on the west? It has a more favourable position to markets than the other two Its immediate hinterland is the Lancashire cotton manufacturing regions, which need vast quantities of raw cotton and foodstuffs. Farther away, by means of the Aire Gap, Liverpool has access to the West Riding woollen area and serves this region with foodstuffs and raw wool; southwards lie the North Staffordshire potteries, and farther still are the midlands The Midland Gate extends its sphere of influence even to London. It has very easy access to all the great centres of Britain

The early port of Liverpool grew up around the pool, now dry land, but originally offering shelter for the ships Modern conditions have demanded the construction of numerous docks on the north side of the Mersey estuary for a distance of between six and seven miles, and they have expanded to the south side at Birkenhead, Wallasey,

etc The river, too, has had to be improved, though a deep channel was kept clear by the scouring set up by the swift current in the bottle neck

The trade is rather widespread The Americas send cotton, grain, meat and fruit, Australia and New Zealand send grain, meat and dairy produce, Ireland sends dairy produce The exports are mainly the products of the hinterland—manufactured cotton and woollen goods and machinery

Manchester—The trade of the port of Liverpool has been encroached upon since 1894 by the port of Manchester In that year the Manchester Ship Canal was opened, and the new twenty-eight foot deep waterway has turned the town from an inland one to a seaport. Petroleum is the one commodity which has tended to forsake Liverpool for Manchester. Meat, paper materials and cotton also form part of its import trade, the bulk of the cotton, however, still enters by Liverpool

London and Liverpool are the two leading ports of British trade; both have world connections. Hull, Manchester and Glasgow fall into a second group—their activities are concerned almost wholly with bulky goods

Other ports—London, Liverpool and Glasgow function also in other ways than as goods ports From these many mails and many passengers are distributed throughout the world. The great trans-oceanic steamship lines have their terminals at one or other, or at all these ports To these three may be added the only really large port on the south coast—namely *Southampton* Space and depth are essential for the modern liners, and these ports have both, either naturally or artificially. Moreover, they have excellent rail communications with the rest of the country. In the matter of mail and passenger traffic Liverpool and Southampton act rather as outports for London Southampton on the spit of land between the Itchen and the Test is amply provided with docks, to which there is easy entrance by the Spithead and Solent, and the double tides give deep water at all times Moreover, Southampton is a convenient calling place for continental oceanic lines, and the trade resulting, together with that carried on with France and the Channel Islands, make it the fourth British seaport

Besides these larger ports there are a number of much smaller ones which are engaged almost entirely with passengers and mails and perishable goods These classes of traffic need to be moved quickly and, as travel on land is faster than on the sea, they tend to go as far by land as possible Hence the ports for this traffic are usually as far out to sea as possible, at points nearest to the land opposite The port itself is not in an exposed position, but in a creek or protected by bars These ports are ferry towns or packet stations. In the British Isles they tend to fall into two groups.—

(1) A group on the south and east coasts connected with the continent:—

Folkestone—Boulogne.
Harwich—{Hook of Holland / Flushing and Antwerp}
Newhaven—Dieppe.
Dover—{Calais / Ostend.}
Southampton—{Cherbourg. / Le Havre. / St Malo}

(2) Between Great Britain and Ireland —

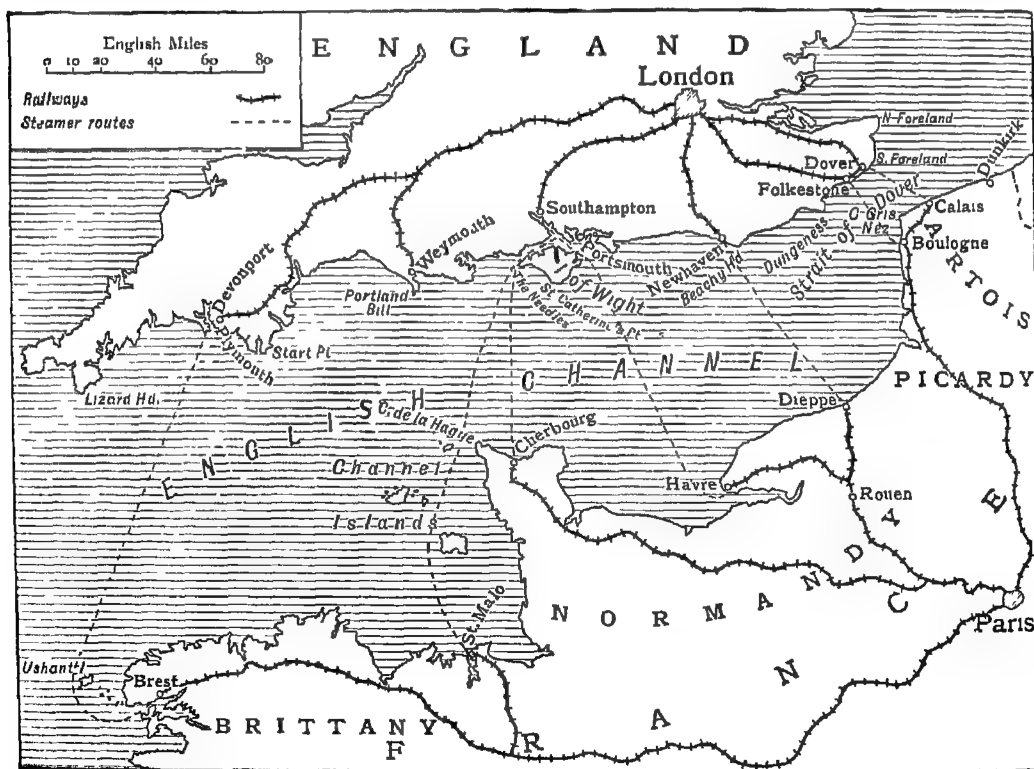
Stranraer—Larne.
Ardrossan—Belfast
Liverpool—Belfast and Dublin
Holyhead—Dublin
Fishguard—{Rosslare / Waterford.}
Bristol—Cork

The continental traffic on the outgoing journey is mainly of passengers and mails; on the incoming journey of mails and passengers, perishable articles, e g., butter, eggs, fresh meat, poultry, fish, flowers; and manufactured articles of relatively high value, e g., silks, wearing apparel, gloves, watches

The trade with Ireland from Great Britain mainly consists of mails and passengers, and British products and goods of foreign origin exported chiefly from Liverpool and Glasgow From Ireland are sent dairy produce and meat

Plymouth, Devonport and Stonehouse are three towns joined into one They stand on the splendid harbour of Plymouth Sound at the mouth of the river Plym Plymouth is a mail station, where passengers and bags of letters from America and South Africa are landed and taken by express train to London. It is also an important fishing port, especially for trawlers, whose nets drag the sea-bottom and catch flat fish such as soles and plaice. Devonport is a naval fortress with large dockyards. Great warships are always lying at anchor in Plymouth Sound, and fifteen miles away the flashing of the Eddystone lighthouse can be seen at night. Plymouth Hoe lies between two parts of the harbour, and on it stands a fine statue of Sir Francis Drake, who was mayor of Plymouth in 1585. The city was at first a Saxon settlement, and is spoken of in Domesday Book. From Plymouth the Black Prince sailed for France before the battle of Crecy, Drake set out from here to sail round the world, the Pilgrim Fathers left it in 1620 in the *Mayflower*, and Captain Cook started from Plymouth on his famous voyages of discovery

Falmouth has one of the finest harbours in the world It is very large and sheltered, and is the headquarters of the Royal Cornwall Yacht Club Falmouth is a port of call for both large and small ships, and vessels can be repaired here Shipbuilding, rope making and engineering are carried



THE ENGLISH CHANNEL

on, as well as pilchard fishing and the export of tin It is the favourite holiday resort of the *Cornish Riviera*, and visitors come to enjoy not only the sands and rocks but also trips up the valley of the river Fal

IRISH PORTS

Ireland claims to be a country richer in charm than most areas of the world In many parts it abounds in scenes of surpassing beauty and interest. There are areas which are remarkably flat, but also, mainly near the coasts, there are great mountainous regions In Kerry, Galway, Donegal, Antrim, Down and Wicklow stand high mountains, and magnificent cliffs often face the sea. Off the north-east coast, connected by electric railway (the first to be opened in the United Kingdom) with the seaside resort of Portrush, is the Giant's Causeway, a promontory of columnar basalt, the pillars of which are for the most part irregular hexagons Much of the interior of Ireland is low bogland The country has the longest river, the Shannon, and the largest lake, Lough Neagh, in the British Isles The longest river is, however, commercially unimportant. Temperature conditions show a moderate range throughout the year, being about eight degrees lower than that of eastern England

Dublin.—Dublin has a beautiful situation on Dublin Bay at the mouth of the Liffey. The harbour is the most convenient point of entry on the fifty mile stretch of coast where the central plain reaches the Irish Sea It is only seventy miles distant from Holyhead and almost faces the important estuary of the Mersey It is thus admirably placed to be the collecting centre for the



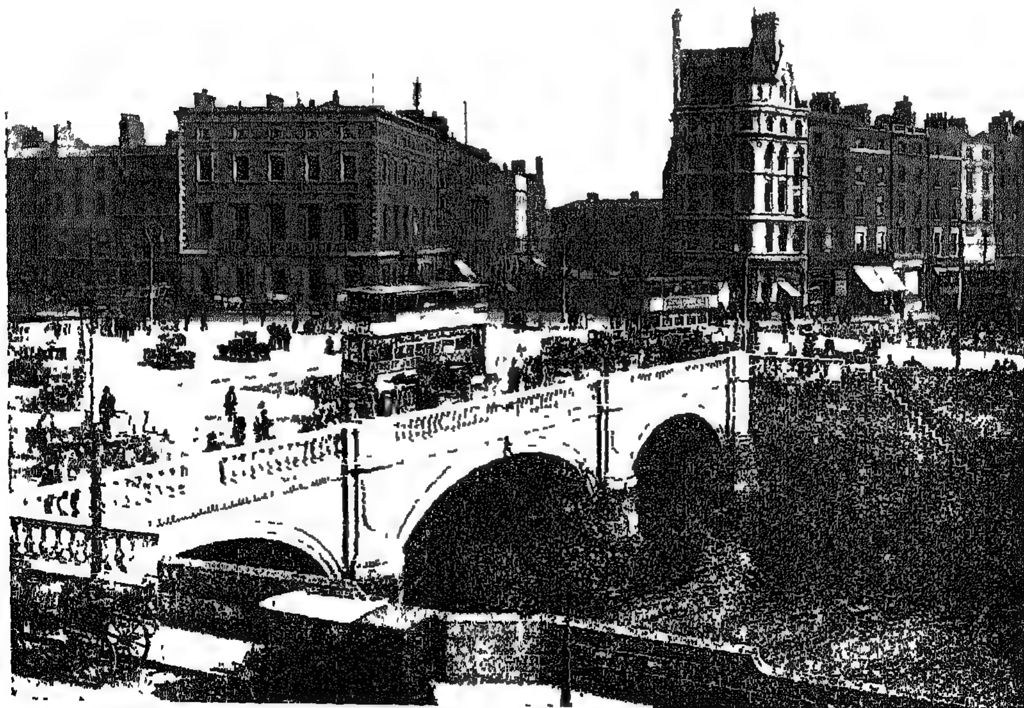
[Reproduced by courtesy of L M S Railway,

GIANT'S CAUSEWAY

plain and the distributing centre for much of the Irish produce to England. The central plain runs down to the sea for fifty miles along the east coast, between the Mourne mountains in the north and the mountains of Wicklow in the south From anywhere along this stretch of coastline there are easy routes into the heart of Ireland, but only at Dublin is there a good harbour, hence nearly all the trade of Eire goes through this port. From the time that English nobles crossed over and settled in Ireland, Dublin has been the most suitable place from which to rule the land, and Dublin's greatness lies chiefly in its being a port and the seat of government.

The Norsemen were the first people to make a small settlement at Dublin round a ford over the Liffey, and they held it in spite of attacks from the native Irish. Its name, *Dubh-linn*—the *Black Pool*—came from the pool made where the Liffey was joined by its tributary the Poddle. In the twelfth century the settlement was captured by Norman soldiers, and became a small town protected by walls. Now it is a city spreading on both sides of the Liffey, which is crossed by twelve bridges Railways from Dublin run across the plain to all parts of Ireland, and it is linked with the river Shannon by canal.

The region around Dublin, being on the east coast, is one of the driest in Ireland, and great fields of barley are grown. This barley is used in the breweries of Dublin for making into millions of bottles of Guin-

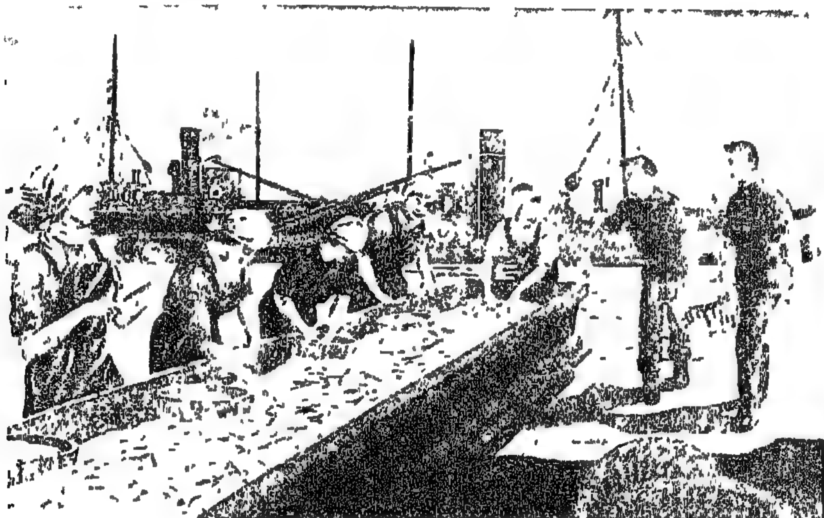


[Reproduced by courtesy of L M S Railway.

O'CONNELL BRIDGE AND BURGH QUAY, DUBLIN

ness stout. There are also biscuit factories, cloth works, and distilleries at which whisky is made Live cattle, bacon, butter, cheese, eggs and stout are the chief exports

Cork.—Cork, a noted seaport and the capital of county Cork, stands eleven miles above the mouth of the river Lee, which flows into a deep harbour. The city lies in a pleasant valley, and is built partly on an island made by two streams of the Lee, which are spanned by nine bridges. At the outport of Queenstown on Great Island in Cork harbour, American mail steamers call on their way to and from Liverpool. The mails are put on the train at Queenstown, carried by rail to Dublin and from there to Kingstown A mail steamer then conveys them across the Irish Sea to Holyhead, and thence they go by train to London and other cities





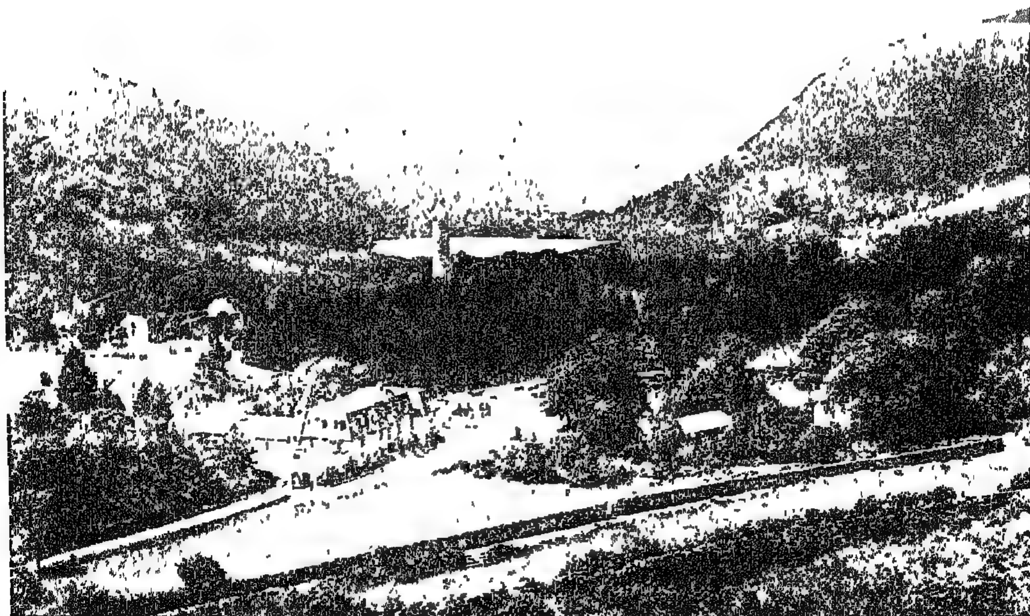
A Catch of Herrings

(Class Picture No 111 in the portfolio)

Cork is a manufacturing city, and as the land around it is given up to dairy farming, it has large bacon-curing factories and leather works, as well as flour mills, breweries, woollen factories and shipbuilding yards Steamers call at Cork with cargoes of coal, timber, grain and sugar, and take away butter, bacon, oats and live cattle

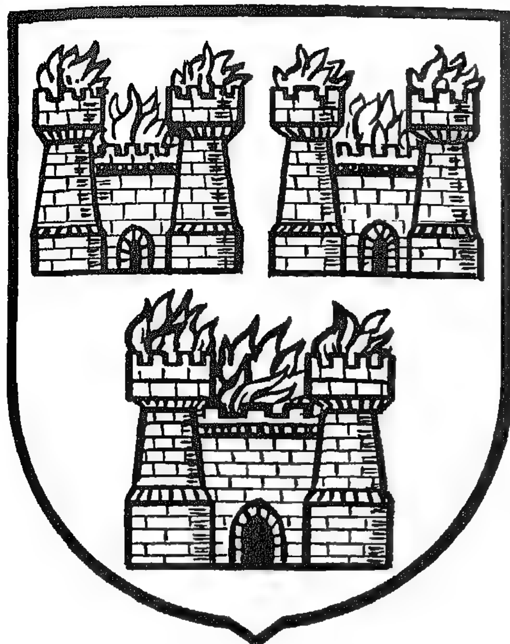
Limerick —Where the river Shannon runs into a long inlet of the sea stands the city of Limerick The Shannon is the largest river of Ireland, rising in the north and flowing southwards across the central plain Just before it turns westwards to the sea, it passes through a narrow opening between steep hills and tumbles for a short distance in a succession of falls Limerick stands at the lowest place where the river can be bridged It is an important seaport and market town A canal has been cut to avoid the rapids of the Shannon, and this brings trade into Limerick from the central plain, while to the south of the city lies the richest pasture land in Ireland, called the *Golden Vale* Here cattle and pigs are reared in great numbers, and Limerick has become famous for its bacon-curing and its hams Pigs are seen near every cottage door, and swarm at the markets and fairs for miles around Most of them find their way at length to the factories of Limerick, and are turned into bacon and ham. There are also flour mills, tanning and harness-making works, and creameries, to which the farmers send their churns of milk daily.

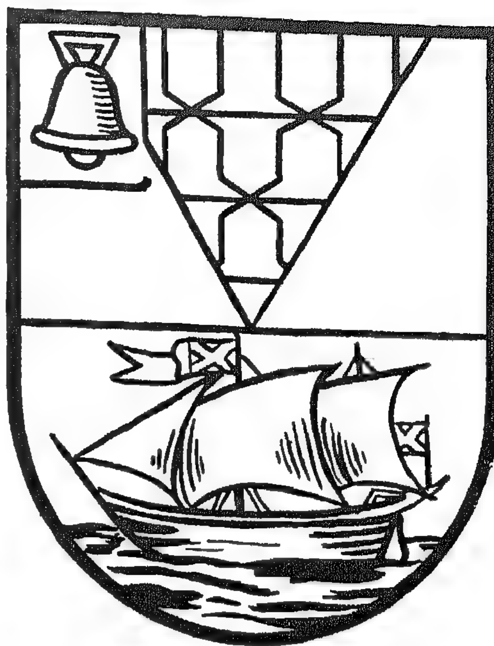
Limerick has stood on the Shannon from

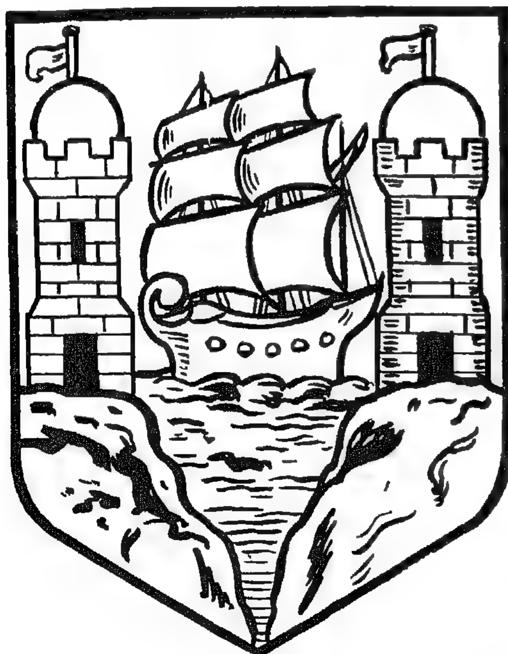


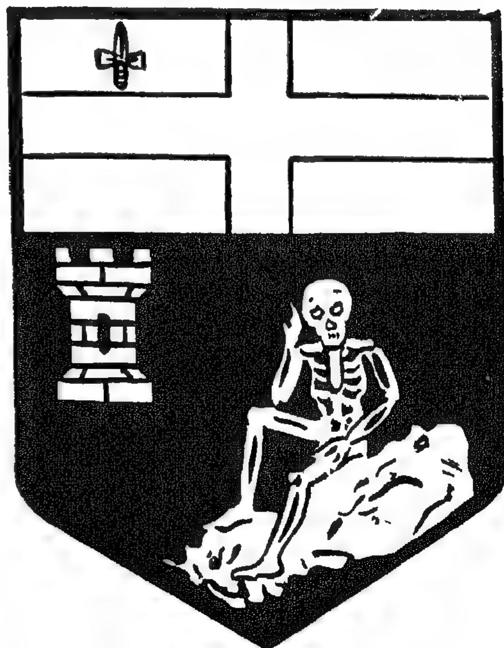
[*Reproduced by courtesy of L M S Railway*

SEVEN CHURCHES—GLENDALOUGH, IRELAND









PUBLIC ARMS

DUBLIN
CITY OF CORK

BELFAST
LONDONDERRY

very early times, and been captured in turn by Danes and English. It was once famous for its lace, but very little is made there now It has an interesting old cathedral and also a beautiful modern one, and there are some fine bridges over the river Close to the city is the famous hydro-electricity station by which the river is being utilised to provide electricity for homes and factories over most of Eire Not far away is Foynes, terminus of the air route to America

Belfast —Belfast, the capital of Northern Ireland, is the largest city in Ireland. It has many factories, and is one of the chief ports in the British Isles. The city stands in county Antrim, where the river Lagan runs into Belfast Lough, an arm of the Irish Sea In the valleys and lowlands of Antrim there is rich soil for agriculture, and the chief crop grown is flax, from the fibres of which is made the well-known Irish linen

Belfast has important shipbuilding yards where some of the world's largest liners and battleships have been built. Coal is supplied by the Ayrshire coalfield. Other manufactures of Belfast are flax machines, rope, chemicals, beer, spirits and tobacco.

The Arms of Londonderry.—The picture of death (or a skeleton) sitting on a mossy stool has reference to the fact that the city, having been sacked by Sir Charles O'Dogharty, was raised (as it were) from the dead by the worthy undertakings of the City of London, in memory of which it was henceforth known as "London Derrie" The Arms of the City of London are in the dexter chief



[Reproduced by courtesy of L M S Railway

CITY HALL, BELFAST

PRACTICAL GEOGRAPHY

THIRD YEAR'S COURSE

(Continued from Vol. III, page 647)



THE TEIFY FALLS AT HENLLAN

A Walk in a Stream Valley

Have you ever tried to pick out and trace the stream courses in a valley? This is often very interesting when you are in the country, and it is surprising how clever you can become after a little practice. At first you will look for the channels and hollows that can be seen on the hillsides. These you will trace down to the valley below where each little tributary joins the main stream After the first few attempts, you will notice other signs which will help you to tell where these tiny water courses are to be found. Look closely for the two parallel rows of hedges, sometimes so close together that they appear to be in one long line. These rows, you may be sure, mark the banks of a little stream. Try to follow the course with your eye from where you stand, and when you reach the valley trace the main stream.

It would be interesting if we could follow one of our streams from its beginning down to the place where its almost fresh water becomes mixed with the salt water of the seas We will do this with our own tiny brooks which we have followed from the hills to our valleys, remembering that what we have seen is to be found also in many other places

One of the first things we noticed when we watched our stream was its changefulness. At times it was full and swift, at others, when there had been no rain, it was low, or even at one time only a dry channel marked its course. As we descend the stream and also the river, we shall see the

same changes in the dry and wet periods Though the river never actually ceases to flow, it becomes shallower when the numerous tributaries have less water to give it

Down the valley there is a small lake It does not appear to be more than a swelling of the river, but it is shallow near the sides and has not the same flow as the river. We have noticed too that the level of the lake does not change so much as the level of the river At times, when the river is in flood and has risen several feet, the lake has extended only a few inches beyond its usual mark on the land and has kept its calm and clear appearance

An interesting feature of the valley is the old water mill Such things are now rare, and this one is fast rotting because it has not been used for many years In these days other sources of power are used to drive the mills, and the valley which was once the site of many factories is now almost deserted The power to work machinery is now chiefly obtained from coal, and the factories have been built near coalfields In a way, it seems to be a pity to leave this old factory to crumble away It did not waste or consume anything when it was working. All its power was obtained from the natural movement of water The only part that Man took in obtaining that power was to construct a wheel, on the double spokes of which were fixed boards. As the water flowed on the boards, it caused them to descend, thus giving to the wheel a continuous movement. In some hilly countries, such as Switzerland and Sweden, where the streams formed from the melting ice in spring rush down the mountain sides, water power is being used a great deal

In one part of the stream valley, the steep sides of bare, hard rocks are close together Here we can see the water flowing at great speed through the narrow channel that we have called "the rapids" Above the gorge, it is easy to cross the stream by a rowing boat, but no one would care to pass through the gorge in a boat

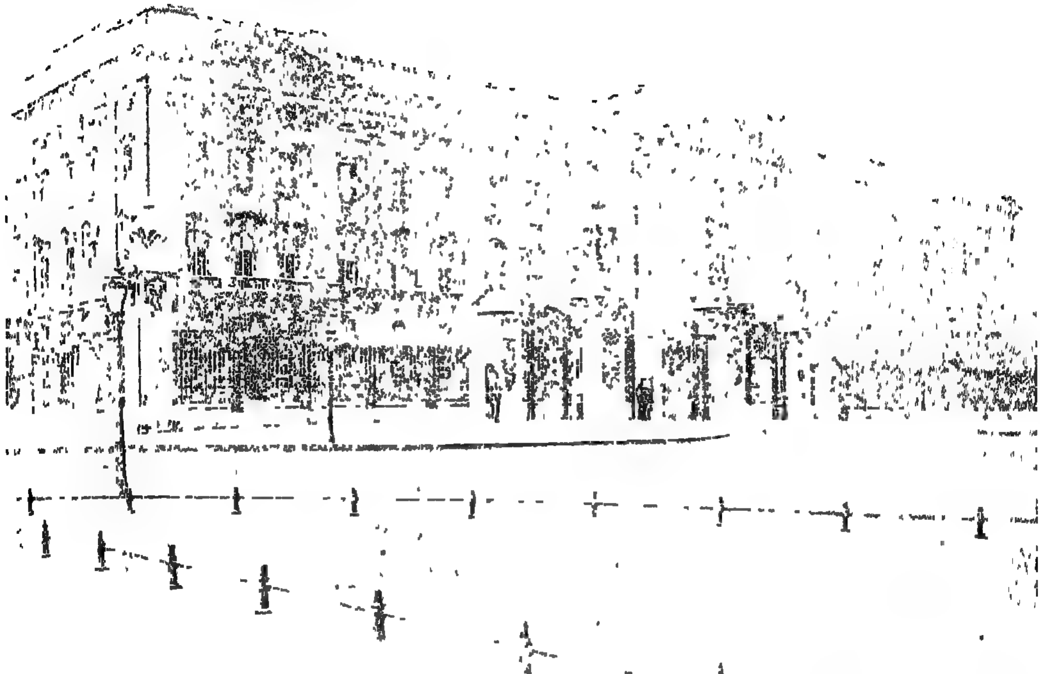
8. MAP WORK

Air Views

Aim.—An extension of the map work done in the previous year The representation of places by pictures and by maps, with special reference to the advantages and disadvantages of pictures

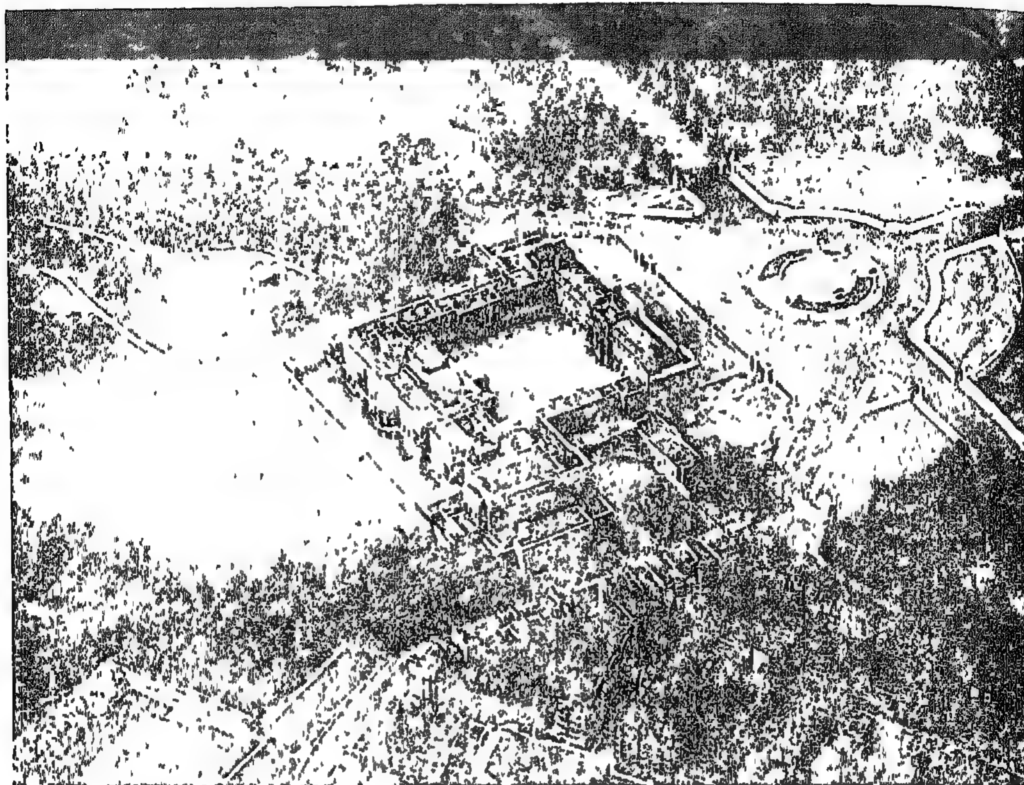
Method.—Obtain a series of views of a building well-known to the children If the children can bring picture postcards with views of the premises these could be used individually with great advantage Direct attention to the views of the main entrance to the building and find out all you can about the form of it from these views How many stories has this building? Which is the highest point on the building? Is the building tall and narrow? Descriptions of its general appearance should be invited from the class so that the main dimensions can be appreciated Which side of the building is shown clearly in the picture? Which other side can be seen? Which is the longer of these sides? Ask the children to examine various objects near the building with a view to contrasting the height of each object with that of any other object shown Such objects as lamp standards, gate posts, monuments, railings, a flagstaff, etc, which have not been too distorted in relative size by being at greatly different distances from the camera, may be selected for this inspection Make a comparison of heights, and attempt to gauge the height of the main building from that of a proximate object How many times higher than the railings is the main building?

Examine an oblique aerial view of the building Which side of the premises is now shown most clearly? Which other side can now also be seen Describe the shape of the building from this view? Which view gives you a better idea of the shape? On which view is the height of the building shown best? Now look at the postcard again Can you say from what is shown



BUCKINGHAM PALACE [Central Press photo

on that view what is on the south side of the building? Turn to the air view What is there to the south? (A lawn and trees) This view was taken from a height of 2,000 feet Does it show us a larger or a smaller space than the previous picture? Ask the children to name things seen on the second view that are not shown on the first view Let them see that the surroundings are visible and that here we have a picture of part of the earth's surface. Point out the trees, the roads, the rectangular blocks of buildings. Look for the features that were noticed particularly when the postcards were examined (It may be found convenient to have one child standing near the aerial view to point out the features and describe what he can see on the photograph) Contrast the heights of the objects again On which view are the heights most clearly shown? On which view can we see the surroundings most clearly? Ask questions to bring out the fact that the air view is a more complete picture of the district than the first photograph Refer to the roads leading to the building, to the details of architecture, and to the general layout in the vicinity Show also, by means of questions, that something has been lost by the change of view, it is more difficult to compare the heights of the buildings and other objects This limitation of the photograph we are examining may be realised by attempting the comparisons made previously, when the ordinary view was inspected e g Which is the highest part

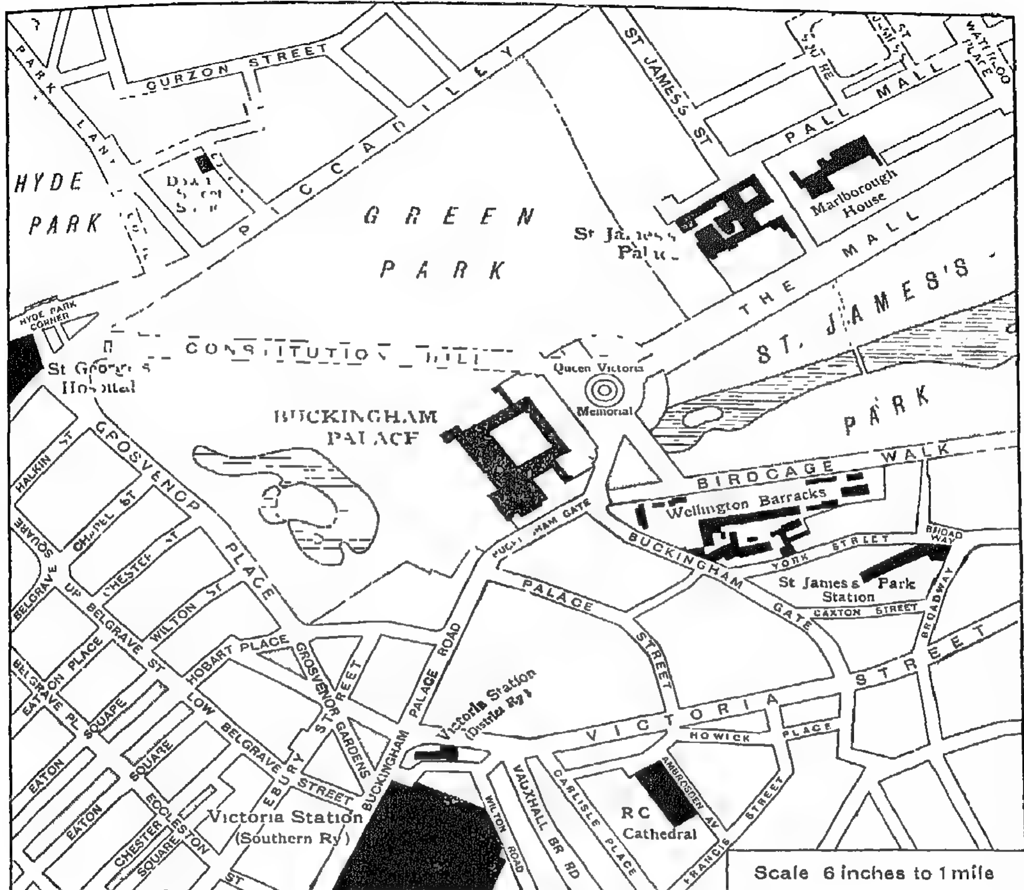


[Photo Aerofilms Ltd

LOOKING DOWN ON BUCKINGHAM PALACE

of the building? (We cannot answer the question simply by looking at this view of the district) Examine an extract from the 6 inch O.S.M. of the district Place the copy near the views If several copies are available distribute them amongst the children, or allow one child to point out on each map while a group watches him First, let the position of the building be found, then find the smaller premises, parks, gardens and roads which are included in the photograph Which of the photographs is most like the map? Which of these gives you a better idea of the district? How are the parks shown on the map? Which feature is most clearly shown on the map? (The roads) How is the building shown? In which direction is the car, shown on the air view, travelling? (Use the map to solve this)

Hints.—An excellent series of "air view" photographs of most large towns in the British Isles has been published, and particulars may be obtained from Aerofilms Ltd., Colindale Avenue, Hendon, N W 9 It is important to remember that we must show the limitations as well as the advantages of all the pictures that are shown Bear in mind that many of the children will be basing their answers on their actual knowledge of the surroundings, and it will be advisable to insist that only things seen on the picture or the plan are mentioned Make the observations as detailed as possible. This may be facilitated by keeping someone



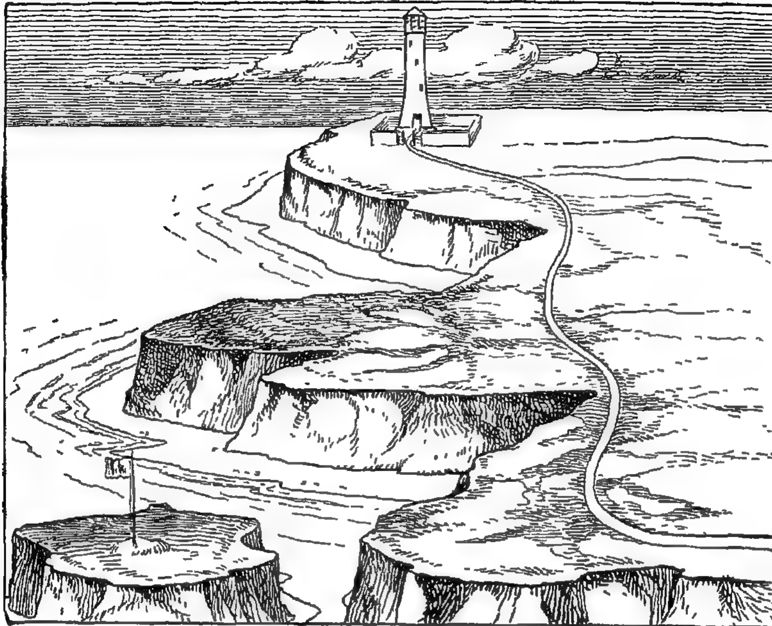
ORDNANCE SURVEY OF BUCKINGHAM PALACE

near the exhibited views to examine them and to point out all places to which reference is made during the lesson. Change the "guide" every few minutes so that practice in this work may be given to several children during a lesson. Group leaders, who may be directing small groups during the stages of the lesson when map reading is being done, will verify their findings by observing the work of the class guide, whose map reading is under the direct control of the teacher. This lesson should leave two points paramount in the children's minds

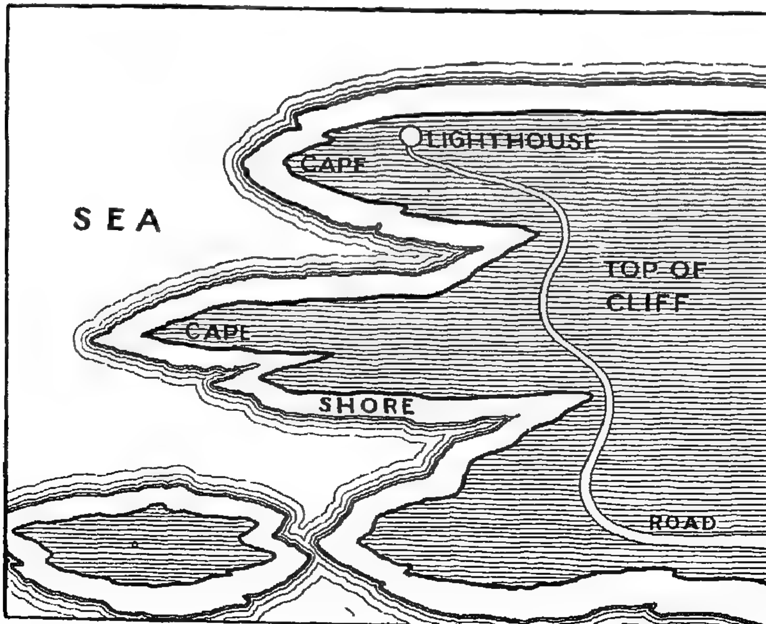
(1) The air view was not so easy to read as the map because it showed all the details of scenery in black and white.

(2) Plans and maps, as we have seen them, are imperfect, because they do not show differences of height.

Sketches.—These two drawings will be useful to the teacher for illustrating the relationship between pictures and plans A picture of the character illustrated might well be modelled in some plastic material by the children



A Picture of a Rocky Sea Coast



A Plan of the same Sea Coast

9. MAP WORK

A Model in Relief

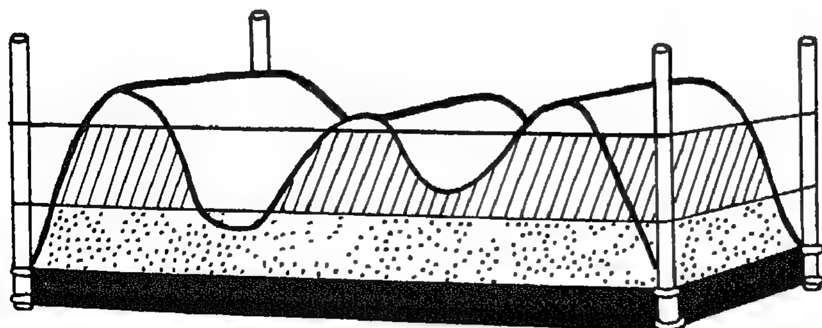
Aim.—To teach the children to make a simple relief model, and to help them to read such models.

Method.—Revise the work of the previous lesson in which the deficiencies of the air views and plans were discovered Supply the children with plasticine either for individual or for group work The class working under guidance may proceed to model a district of the locality, one for preference where variety of relief is to be found and where some landscape study has been made Allow freedom in the choice of scales, but some exaggeration of vertical scale may have to be encouraged so that the features will be sufficiently distinguished During the process of making these models, landscape sketches may be exhibited to remind the children of particular views Ask the children to orient their models and affix tags to prominent points for reference Exhibit before the class the papier mâché model of the district painted in the conventional way: green, yellow and brown to represent the increase of height Hold before the model a frame with strings at the chosen vertical intervals to show the true significance of the colours These strings can be attached to sticks fitted into slots round the frame of the model. Affix tags to the uprights showing lowlands, uplands and highlands

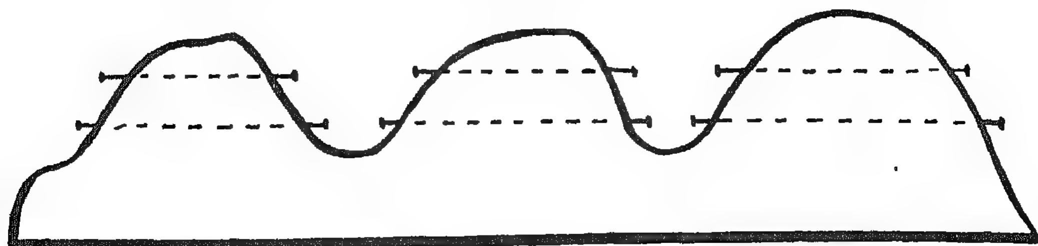
In this way the model may be read from the colours Ask a child to point out certain elevated places These are, we notice, above the highest string: they are high lands, and we observe that they have been painted brown Examine the low land in the same way, observing this time that the features are below the lowest string and that they are green. Then notice the slopes, coloured brown Question the children on the significance of the colour on the relief model with a view to establishing certain truths viz places with the same colour may or may not have the same altitude, while places having different colours *cannot* have the same altitude Ask the children to express this fact in an explicit form, such as "All places coloured yellow on the model are higher than the places coloured green" Refer to other points on the model contrasting yellow and brown, and also two points between green and yellow.

Supply the children with pins and ask them to separate highlands from uplands, and uplands from lowlands by pushing the pins horizontally into their models

Hints.—It is important to remember that in this lesson we are making the nearest approach to an actual representation of the surface of our locality that is possible. The finished model has many advantages over the ordinary map, but difficulties and expense of production, as well as inconvenience of handling, make the model unsuitable for the geographer's use. Here



PLASTIC MODEL IN RELIEF



PLASTIC MODEL WITH PINS INSERTED TO SHOW HIGHLANDS, UPLANDS AND LOWLANDS

we are using the model as a stage in the appreciation of our recognised method of showing physical features: the physical map It is therefore unnecessary to have a punctilious regard for the scales of the models, so long as the unlevel surface shows some conformity with the actual known conditions of the region. The class model, coloured as suggested, will repay close inspection and should at some time be seen in plan by every child so that he may see what a region looks like, and "discover" the value of the symbols to which he is now being introduced It will be necessary, in some districts, greatly to exaggerate the vertical scale on the model so that the differences may be sufficiently great to be easily appreciated.

10. MAP WORK

A Simple Relief Map

Aim.—To teach the children how to make a simple relief map and to help them to read it.

Method.—Make use of the coloured relief model which was made in the previous lesson. Revise the points concerning relative height noted earlier Place the model on a table or desk before the class so that it may be seen "in plan" by as many children as possible Have also on view a rough contoured sketch-map of the district on the same scale as the model, with lines drawn at suitable vertical elevations so that the three broad divisions—lowlands, uplands, and highlands—may be recognised Let the children point to the highlands on the model, and by noticing carefully the position of these within the limits of the region, point to their position on the map Lead the children to associate the contour shown on the map with the row of pins on their model Colour the map brown to correspond with the colouring on the model. Next examine the zone of yellow around the brown Look at the model and show exactly what part is so coloured Let the children find out which part of the map should be painted yellow, again noticing the relationship in position between the pins on the model and the contours on the map. Complete the colouring of the map, and question the children with a view to emphasising the information which is shown on our simple physical map. This may be done by referring to such matters as ascending or descending when going from *A* to *B*, the direction of stream courses between points, simple questions on intervisibility, and, with bright classes, it should be possible to associate profile with the distance from brown to green. The teacher may proceed to a consideration of distances and slopes, consulting the relief model for confirmation of points or to assist the children whenever it is necessary Ask the children to say which is the shorter distance from *A* to *B* (two points on the lowland), through *C* (a point on the straight line between them) or through *D* (a point on the lowland also). Which is the easier way to travel? Mark points around the foot of a hill and ask children to name the easiest and the hardest ways to climb to the summit

Let the children use the models which were previously made (working in groups if they had done so in the modelling lesson) and ask them to make maps of the district showing only the contours which are indicated by the pins (These pins should approximately correspond in position with those on an exhibition model, and may be inserted by the children when the teacher has placed the first one at the required height) Each child should colour his map in the recognised way and mark in a corner the north-south line. The next stage is to associate the real thing with the maps that have been made, and for this purpose a journey to the top of a hill is the best procedure. From the selected point, with their own maps, correctly oriented in position before them, ask the children to find the district which on their maps is painted green Examine the surface features in turn, each time making reference to the representation of it on your maps Associate river and stream courses with the relief, and mark on the map with a pencil anything worthy of special note, e g the river flowing along the valley and the tributaries rushing down the slopes

Hints.—The procedure is from model to map Make numerous references to the model at the preparation, mentioning known features and pointing these out so that they are well known Later make the map the index to the region and see how much can be found on the map that was also found on the model At this stage we are reading our scenery from the map but we must later make the association between map and scenery more definite by a comparison of both in the open from a high point This is the stage where we make a definite link between our symbol and our scenery, thus laying the foundation of map reading on which the appreciation of distant lands from a map depends Devise exercises which will make the reading of physical maps a feature of the work in the application stage, e g ,

(1) Place three crosses on your map marking points which you know are at the same height.

(2) Print the letters A, B, and C at points on the map, A being the lowest, C the highest, and B between these

(3) Divide your map into four equal sections by straight lines In which section is the highest land? (N , S., E or W). In which section is most of the lowland? (N , S , E. or W.)

11. MAP WORK

Position on a Map

Aim.—To introduce the children to the geographers' method of indicating position

Method.—Mark the blackboard with a cross in chalk. Invite the children to tell you as exactly as they can the position of the mark that you have made. The distance from the right or the left edge and that from the top or the bottom of the board will be accepted as the most satisfactory answer To this expression of position in terms of two dimensions, the teacher will contribute what assistance may be desirable considering the difficulty which this new conception presents and the essential importance of a clear understanding of it. As you proceed show that many crosses could have been made say 10 in. from the top of the board Draw several other crosses at this distance from the top Make these in chalk of different colour. Then ask for the second dimension by which the *white* cross may be denoted. Obtain the two dimensions showing the position of the red cross and the other crosses. Clean the board thoroughly and let the class put the method of indicating position to the test. Send someone from the room. Mark a cross on the blackboard. Let the remaining children notice its position for a short time, then obliterate traces of the mark Allow a child to describe as accurately as he can the position of the

cross to the one dismissed. From the directions he has been given the boy will try to put a cross where the mark was previously made. Invite the class to say whether the mark is exactly in the proper place That work was perhaps well done, but it was no easy matter for the two children most directly concerned to gauge the two distances so well Now we will make the work more simple Draw horizontal and vertical lines on the board at regular intervals between them Give the columns letters and the rows figures Working in the same way as before, with an absentee from the class, make the mark which is to be observed silently for a brief time Repeat the former method of selecting one in the class to tell the returned boy exactly where the cross was made Try one or two more exercises of the same type, this time inserting crosses and asking for the answers giving positions immediately Then ask the children to put crosses at B7, C4, E1 and such points. From this stage of purely introductory work it will be possible to extend the reading to the simple maps and plans with which the children are already familiar. Either draw clear red lines across the exhibition maps to mark off the columns and rows or make a wire grid in a wooden frame which can be placed in front of any maps Mark the horizontal and the vertical divisions as before and question the class about the position, on the map, of the salient points Where is K——e Hill on this map? (K7) What is the name of the stream in B4?

Hints.—It is not difficult to devise ways to illustrate the necessity for a second method of indicating position. Our first method, that of giving the compass direction from a known point, showed relative position with that point Now we must find a point without making reference to one that is already known. Exercises in the application of the principle should be frequent and develop in time to the use of the lines instead of spaces, as indexes. This will prepare the way for the conventional manner of indicating latitude and longitude

The following exercises will be found very useful

Cut out a piece of squared paper 20 squares by 20 squares

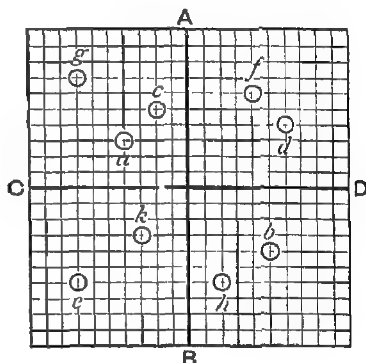
Mark the strong lines AB, CD

Horizontal lines above CD we will call north

Horizontal lines below CD we will call south

Perpendicular lines to the right of AB we will call east

Perpendicular lines to the left of AB we will call west

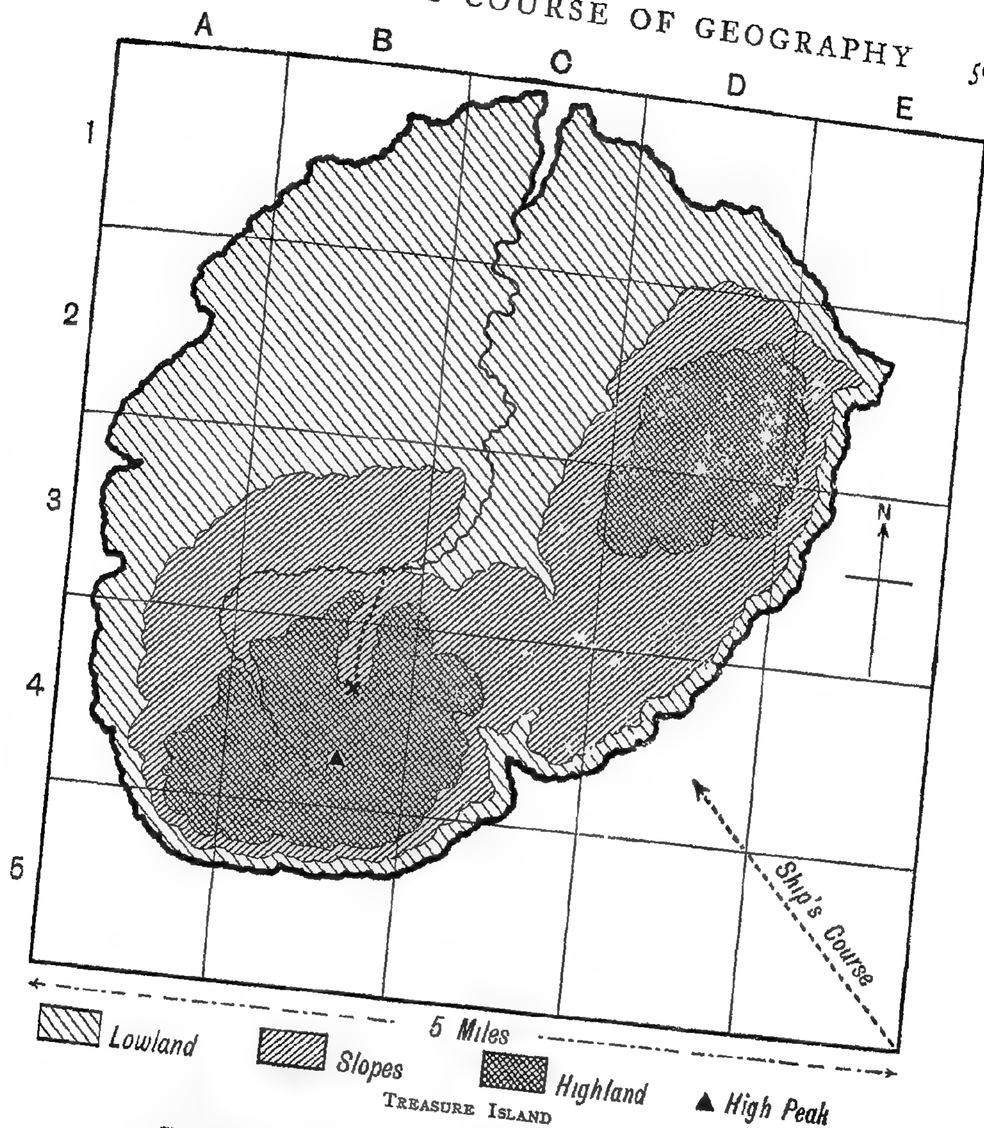


To locate correctly the letters *a*, *b*, *c*, etc we should write as follows:

a is 3 squares N.; 4 squares W
b is 4 squares S ; 5 squares E
c is 5 squares N ; 2 squares W.
d is 4 squares N ; 6 squares E.

Write down the positions of the letters *e*, *f*, *g*, *h*, *k* Mark the positions of the following·

l, 5 N. 4 W. *n*, 9 N 6 E.
m, 8 S. 1 E. *o*, 10 S 10 W.



TREASURE ISLAND

STORY

Treasure Island

On 10th May, 1860, the barque *Elizabeth* left New Guinea for England, sailing via Cape Town and chartered to call at Java In those days the Arafura seas were unsafe for peaceful trading ships because of the large number of privateer ships that used to raid and plunder the unarmed traders. Such a kind of plunder-ship must have sighted the *Elizabeth*, for our information gives a fairly good description of the boat which chased her three days after she had left New Guinea. Entrusted to the captain of the *Elizabeth* was a store of bullion, which he had to carry to the docks in London,

there to be delivered to the couriers from the Bank of England When the captain saw that there was danger of being caught by the pirates, he decided to make a desperate effort to save the precious freight which he had on board He hoisted all the sail possible, sailed his ship as fast as she could sail, rounded an island, and unseen by his pursuers sent ashore his midshipman and four men to bury the chest of valuables The later incidents of this voyage are a mystery, what happened to the ship and to the crew we shall never know, for this brief story is the statement contained in the bottle, with a plan, when it was picked up on the shore of Timor many months later.

Notice the plan. It was very well made and intended to be a complete guide to the spot where the treasure lay If you examine it carefully you will see very clearly that all the things we should want to know about the secret spot are shown on the chart. In fact, we could find our way to the place if we could navigate a ship Let us trace the route we should take and the way we should find this island among so many others.

The first thing in the plan which concerns us is the distance and direction of the island from the port of Moresby This you will see has been shown, though not so clearly as we are generally accustomed to having distances given. The *Elizabeth* was three days' sail from Moresby when she was forced to send the chest ashore; that is our only clue to the distance. We must use our atlas and make calculations which will help us over the first difficulty, but there is a line on the plan showing the actual course of the ship and this will help us very much in finding the island. Therefore we know that we must navigate our ship on a course due north-west for a distance that could be covered by a sailing ship in three days.

Another difficulty soon appears. This sea is dotted with hundreds of tiny islets, all unnamed, and it is only with some difficulty that one is known from another. How are we going to find the one that we are seeking? Is there any special thing on our island that will make it appear different from the others? We must try to imagine what this island would look like on a photograph taken from the south-east, so that we shall be able to recognise it from the sea. Notice the plan It shows that there is a hill to the south-west and another lower peak to the north-west. Between these there is a valley. The highland is close to the coast on the south-east side so we should see before us a cliff coast, high and unbroken. When we have found an island with features like the ones that have been named, there is still another way to make sure that we are not mistaken. The scale will show us whether this island is the same size as the one which has been planned.

What do we next wish to know when we have found the position of the island? There should be no trouble in finding out the landing place. The little inlet on the low north-west side is the only opening on the coast, and even if we were not shown this on the map it is the place where we should land. The sailors who made the plan marked this spot as C 1. Find the tiny opening in that space, but remember it may not be so easy to find this place when we are landing on the island How can we find it on the island? It seems to be nearly at the most northerly point of the island, or we may say it is almost due north of the highest hill

Our next stage in the journey is not difficult We are directed along the stream to the gorge in B 3 where we must turn to our left, follow the track marked by stones every six yards till we come to the cave at the place marked X, and there the treasure is placed. We shall not need to know much about the stream The distance from the coast to the gorge we can guess if we remember that the side of each square is one mile Suppose then we say that we must walk about two miles along the stream before we reach the gorge, and we can judge the distance from the stream to the cave in the same way to be about half a mile. Then we have arrived in B 4, at the point shown on the plan, which marks the place of the concealed bullion

PRACTICAL GEOGRAPHY

FOURTH YEAR'S COURSE

1. WEATHER STUDY

Aim.—The continuation and extension of weather observations, the recording of these, and the reading of weather charts.

Method.—*Temperature.*—Exhibit a large prepared graph showing the temperature readings taken at noon during any period to which attention is being directed. Direct notice to the fact that the height of line on the graph corresponds with the state of temperature. A high temperature gives a high position on the chart, but, when the temperature is low, the line on the chart descends Ask questions to discover whether the significance of the line is understood On which day was the noon temperature highest? On which day was it lowest? Point out a day on which the temperature shows a great rise?

Now exhibit a graph with both the noon and the minimum readings (If a maximum and minimum thermometer is not available, the readings of instruments near the school will do quite well) Have the readings marked in distinctive colours. At this stage call the minimum readings the "night temperatures" Ask questions concerning these night temperatures to bring out the appreciation of differences from night to night. Proceed to a contrast of day and night readings. Question freely on the daily readings. On which day was there the greatest difference between day and night temperatures? On which day was this difference the least? Enquire into instances that are exceptional. Whenever the combined chart is inspected make notes on the blackboard to show clearly the weather conditions on the days under review. On lines similar to the following make a summary to see if the conditions can be attributed to certain contributory causes, such as, a clear sky giving a warm day and a cold night, or a cloudy sky giving a relatively cool day and a comparatively warm winter evening:

Great Difference	*State of Sky*
March 30	Clear.
April 7	Clear.
Little Difference.	*State of Sky.*
March 20	Cloudy
March 25	Cloudy

Construct and show charts which will illustrate the relationship between the length of the midday shadow and the number of hours sunshine each day. This chart may be constructed from data partially collected in the previous years. The children will have seen the shadow lengths taken by means of the yard stick, and the method of plotting the shadow length will not be difficult to follow (See Vol III p 629). The question of sunshine is one which is worth considering almost equally with that of temperature, as the number of hours sunshine is a determinant in the cultivation of crops. Question the children about the matter on this chart. During which month is the shadow of the stick shortest? In which month are the days longest? On which two months is the shadow about midway between the June and December shadows? (March and September) What can you say about the amount of sunshine that we receive on these days? The shadow lengths recorded on this chart should be those taken on the 21st of each month.

Rainfall.—Obtain several water-tight tins Place them out in the open during a heavy

shower of rain. Tins of various shapes and sizes will be found quite suitable for this work, e g biscuit tins, cylindrical cans, or suitably shaped mugs—those with a base area equal to that of the aperture. Have the vessel brought before the class when a quantity of rain has been caught. Use a special ruler, one that has no flange at the end, and by dipping this ruler into the vessel find the height of the rain that has collected If more than one vessel was used measure the water in each. Compare the height of the liquid in each vessel What do you find? (Although the catching surfaces are different the same height of water is found in each) Repeat this observation on several occasions, sometimes, under experimental conditions, leave the cans out during a whole day or night Measure the height of collected rainfall until the idea of so many inches of rain is understood Make easy calculations based on the following.—

1. Area of the aperture of the vessel.
2 Volume of water contained in the vessel.
3 Weight of water in the vessel.
4 Weight of water on an acre.
5 Weight of water on the basin of our river.
6. Gallons of water on the basin of our river.

After using data that has been collected in this way as a basis for your calculations, substitute the published figures referring to your area and find information for daily, weekly, monthly, seasonal, or annual periods.

Evaporation —Direct attention to the process of evaporation, either by experiment or by spending a few minutes' observation when this change is taking place in the open and is so rapid as to be seen easily. An opportunity of watching water vapour rising from the paving flags should not be missed, as it is an excellent opportunity to teach children one of the important principles of our subject Look for signs of condensation. These are numerous and not difficult to observe Let the children find the essentials for this change of state, either by argument from observed conditions or by the method of experiment. Accept only a succinct statement of the law; or, from the unsuccessful attempts to obtain one, frame a suitable definition yourself. While signs such as drops of water on a cold window, or on a cold wall, are often mentioned, the obvious indication of condensation by contact—dew—is often disregarded Establish the notion of change of state which takes place· ice, water, water vapour, and show diagrammatically the processes and the causes of change

Make use of local conditions to develop the notion of climatic regions This can best be done by comparison and contrast of these regions with our own. Suitable occasions may arise during a year's work to illustrate from local weather the climate in certain parts of the world. Show also that there are well-marked regions, widely separated, with a noticeable similarity of climate These seasonal studies may take the lines of a thorough enquiry into local surroundings when certain conditions prevail —

1 *Drought* —Withered natural vegetation; shortage of water hinders cultivation, gardeners use the hoe and water the plants Refer to Egypt and Australia, and note the necessity for regular irrigation.
2. *Summer Rain*·—Freshening effect on vegetation, the rapid growth of plants. Note the importance of these two conditions towards the production of abundant vegetation. Refer to the growth of plants in a greenhouse, and rice and tea culture in India.

Hints.—The foregoing will be attempted when the conditions for observation are most suitable, and it will be found advisable to spread the work over the whole year. As in the previous weather studies, the opportunity to notice any feature should

not be missed The enthusiastic teacher will never lose a chance of directing attention to something associated with this branch of geography whenever he assembles pupils in the open. Remember that the frequent repetition of these observations is habit forming, and interest follows when the children find how significant some of their discoveries are Observing, recording and reading records have so far been the chief branches of our weather study, but some teachers may find that at this stage they can develop ideas of the way in which climate controls vegetation and human activities. In such work the weather studies should form the basis of contrast or comparison Consider the dual conditions affecting plant life, viz sunshine and water supply—we are for the moment ignoring the fertility of the soil What is the state of our natural vegetation when these two are found together? Does the plant life look as strong and healthy after a heavy shower in winter? When does the vegetation look weak and stunted?

2. LOCAL INDUSTRIES

Aim.—To find out how we earn our living, what we do with our surplus produce, and a few simple reasons why this work is done here.

Method.—Refer to the signs of industry which are most obvious to the children: the goods carried in the streets, the things to be seen near the big works, the particular trade of parents A staple trade may be noticed, in which case there should be full enquiry into the work along the following lines. raw materials used and from what source, the processes, simply explained; and the market of the finished goods. This may lead to a brief consideration of a few subsidiary industries which are obviously dependent on the major one Underlying the idea of manufacturing industries should be a few notions as to why they are localised These may be gained from some lessons on local industries, if the following points are carefully observed and emphasised. What is the thing on which all our local industries depend? (Coal) Where are the nearest coalfields? How far is that from here? How is the coal brought to the works? From which country does the raw material come? At which port does it arrive? How far is that from here? How is it brought from the port? How is it delivered at the factory? Mark the world routes over which raw materials are carried for use in the chief local industries, and also show the routes by which our "exports" find their market If the district is associated with cultivation or agriculture, the more restricted range of markets is still an effective way of linking *here* with *not-here* Trace the local surpluses from the cultivator's place to their destination, and try to create an idea of the transit of goods comparable with the idea of "export" and "import" Make use of the signs by using the indicator to point the way to —farmers, fishermen, miners, cotton growers, sheep rearers, etc.

Hints.—In the lessons on local industries the children will be able to contribute a fair share of the facts if they are encouraged to look for information The parental occupation does much to create an interest in what we manufacture and in our imports and exports There should be a definite plan in the work, leading from the purely local interest in the production to the association it gives us with other lands Specimens of raw materials, small implements, articles in various stages of manufacture, and pictures of the workers should be used as frequently as possible Have on view a world map and a globe Make the connecting link between dependent regions vivid by the use of tapes or coloured wool· e g , join Yorkshire and Australia by a blue ribbon, Lancashire and the Southern States of U.S A. by a red ribbon, which is continued to India and China, on the map of Europe join Norway and Sweden to the iron smelting and manufacturing centres on the Tyne, Wear and Tees, similarly

join Spain and South Wales Flour milling near the large ports makes the use of yellow ribbons to the granaries a very necessary addition, therefore join Cardiff and Liverpool with Canada; Hull with India, and London with the other tapes or ribbons

8. THE COTTON INDUSTRY

Aim.—To show how our district (in Lancashire) is connected with distant lands by the industry which is carried on here (The method outlined below is such as would be used in dealing with manufactures in other districts)

Method.—Have ready for use a map of the world, a sample of cotton, and any suitable illustrations of a cotton plant or cotton fabrics that can be obtained Proceed from the known fact that cotton goods are manufactured near the school, to what is unknown concerning the growth, packing, shipping and delivering of the raw cotton. Mention the processes, enlarging on certain points where personal knowledge of the operations is available, or where specimens of interest may be shown Then continue to tell of the necessity of cotton goods as the most suitable form of dress material in subtropical regions The introduction may be a brief reference to our staple trade. Ask the children what is made at —— mill At which other mills in the town are cotton goods made? What is manufactured at most of the mills in our town? From which part of the world does raw cotton come? (U.S A , Egypt, India) Find these places on the map of the world. Have these places a warmer or a cooler climate than ours? Point out to the class the chief cotton growing states—Texas, Arkansas and Alabama, and the ports of Galveston and Mobile. Ask a child to trace the route from New Orleans to Liverpool This should be marked with red ink on a blank map of the world. If a little loose cotton is handy, make use of it to show the necessity of baling the cotton into tightly pressed bales before it is loaded into steamers. Mark the port of arrival, and draw a sketch map showing the route from that point to your town. How is the raw cotton brought from Liverpool (or Manchester)? Why do some manufacturers have a private railway siding? Give a brief description of the processes of manufacture, dividing them into the two well-marked divisions of bringing the fluffy fibres to a long, thin thread, and the final stage of weaving the threads into a fabric. The stages may be as follows

1 Bale breaking, where the bales of cotton are broken open by machinery.
2 Scutching and carding, where the fibres are loosened and drawn into parallel tubelike forms
3. Spinning, where the cotton is stretched and becomes twisted like the strands of string
4 Weaving, where the cotton threads, by means of a process very much like mechanical darning, are crossed to form a finished fabric

After bleaching, or even sometimes as "greys," the cloth is sent to other countries To which country do you expect it to be sent? Why is cotton a suitable fabric for wear in India and China? Trace the route and notice the great distance the cotton is sent to be manufactured.

Hints.—Things that should be borne in mind during this section of the work are —

1. To keep in perspective the fact that we are trying to show our part in the world's work.
2. We are trying to accomplish this by tracing the chief work of our people and its effect on others
3. The stronger we can make the local ties the stronger will the interest be in the geography of distant lands, therefore any article of general local use, or any familiar local produce which can be considered as a link in the industrial chain, should receive attention.

4. THE WOOLLEN INDUSTRY

Aim.—To show how our local trade (in a Yorkshire town) depends on the work and conditions in other lands, and to interest the children in the life and the work of all people connected with our trade

Method.—Use the map of the world, a sample of wool, and suitable pictures of sheep farms. Examine any articles of woollen or worsted and separate threads. Turn the threads against the twist so that the fibres separate and the single strand can be examined If it is possible to give each child a small quantity of wool, preferably washed, then we can make a clear comparison between the two fibres, cotton and wool. Let the children observe the differences What is the difference in colour? in feel? in length? From whence does the raw wool chiefly come? (Australia, New Zealand) Trace its route on the map noting that the Suez Canal route is not the general route for this traffic In which parts of Australia will most sheep live? Before giving an answer think whether the animal is fitted for life in a warm or in a cool country, and remember that southern Australia is cooler than the northern part The chief port of arrival in England is London, where the wool merchants established their markets long ago, when English wool was sent to the continent for manufacture. To-day the wool is landed at London and sent to Yorkshire for manufacture. Describe the processes very briefly

1. *Dipping*: the preliminary cleaning of the wool while it is on the sheep's back.
2. *Shearing*. usually about a month after the dipping when the gloss has returned to the fleece.
3. *Sorting*: where various qualities are selected for their length and colour.
4. *Washing* to remove the dark and strong smelling greases and leave the wool light, fluffy and soft to the touch.
5. *Drying*. a stage of the work once dependent on the weather, but now effected by machinery.

The processes named are generally done abroad, and the first thing to be done at the woollen factory is the unpacking or teasing, which includes the extracting of impurities from the wool Once loosened and cleansed, the wool is ready for the carding machines which separate the fibres, bringing them into a light mass by stages Combing or carding is the next stage, and the one or the other depends on the quality of the staple and the later use to which it will be put, whether as worsted or as woollen Now the wool is ready for the spinner who draws out the loose cord made in the previous process and twists it into a strong thread Notice the samples of woollens and worsteds that may be available In the woollens the fabric is fluffy because the fibres are mixed, long and short, and have not been combed into parallel threads, whereas the worsteds are smooth and strong with the fibres in every thread quite parallel Tell briefly how the threads produced by the spinner are made into a fabric Illustrate the design by means of a sketch in coloured chalks on the blackboard or by using a hamper cover Find the main threads above and beneath which the weft threads pass, and show that the principle of weaving is the same in the textiles as in basket making

From which place did the raw wool formerly come? Are there traces of old factories in our district? Tell where you have seen these old mills Why were they in those stream valleys? (For power and for washing) Name some of the things needed by the woollen manufacturer. (Raw materials, water for cleansing purposes, coal for power) In which part of the world will woollens be suitable for wearing apparel?

Hints.—Try to bear in mind that we are attempting to bind our life and work here with that of the people in other lands Our industry is a strong common bond and

one that should arouse an interest in all who in any way contribute to its operation. Therefore, the more interesting the local industries become to the children, the greater will be the interest in any who participate in that industry, whether as part producers or as consumers If we can bring out the broad facts of the localisation of industry, we shall be preparing the way for an intelligent appreciation of an important aspect of human geography to be studied in the secondary school It will be a waste of time to consider the details of manufacture too closely, and the aim should not exceed a simple understanding of the chief stages in the preparation of woollens. Keep in mind the requirements of the manufacturer as his business extends. The birth and growth of the trade are points to notice. As our home supplies of wool have become insufficient we have had to buy from abroad. Refer to the world map for routes, and point out all lands from which we receive wool, drawing attention to the fact that they are temperate lands If the subtropical plant cotton has been considered, show the difference in the regions of production of wool and cotton Find the distance from your town to London, the port of arrival, to the coalfield, to the nearest port, and to the streams.

5. THE IRON AND STEEL INDUSTRY

Aim.—To show the geographical conditions affecting our local industry, with special reference to the link between ourselves and those who contribute in distant lands.

Method.—Where are the iron and steel works in our district? What do we see being taken to these places? Where has the iron ore come from? How has it been brought? From which place has the coal come? From where was the sand brought? Tell the class something about work in the ironworks and the several processes to which the iron ore is subject before the iron or steel is produced From the extraction of ironstone to the final stages of manufacture the operations may be described with just the amount of detail that the teacher may consider necessary. Personal knowledge, local interest and the capacity of the children are the determinants here, but the following points should be included in all descriptions —

1. *Iron in the ground.* The veins and beds Chief ironfields in Great Britain, and the chief ironfields in the world.
2. *Preparing and smelting* The processes of separating impurities. Give a short description of the blast furnace and the use of flux
3. *Moulding* Explain the purpose of the grooved sand into which the molten metal flows and the various "pigs" or divisions When solid the metal is very brittle
4. *Wrought iron* The greater strength of "hammered" iron and its resistance
5. *Steel.* The manufacture of a metal of hard resistant qualities by adjusting the carbon content.

Find out, by questions if possible, the particular form of metal work made in the locality Is your district a smelting centre? How can you tell when the blast furnace is in use? What happens to the iron that is made here? To which place is the pig iron sent? How does the pig iron differ from cast or wrought iron? (Dull appearance of many impurities.) Where is the moulding done? Name some of the articles that are moulded Name some articles made from steel

Hints.—Here again the strength of appeal of the local industry will account for a large number of facts being familiar to many children The teacher's work is to act as a collector of these facts from those who can contribute them, marshal them so as to make them clear and intelligible to the whole class, and also to put the facts in their true setting as part of the scheme of production As it has previously been referred to, there

is no reason to emphasise the importance of establishing the link between our industrial centres and the foreign mining centres Simple ideas of economics may also be gained by referring to the transport between ironfields and coalfields Why is the coal sent to the iron mines for the smelting? (Think of the waste caused by carrying such a large amount of dross with the iron ore) Why is the smelted iron sent to the coal to be moulded and changed into steel?

6. MAPS—DIRECTION

Aim.—An extension of the previous year's work in map reading and map making, with special reference to easy distributional maps and simple indexes

Method.—Draw an extract copy of the local 6 in O S M on the blackboard showing only the main roads Make sure that directions are understood by the children, and mark the limit of each route by including some feature that is fairly well known. Now ask the children to copy the sketch map, supplying them with paper on which the extract can be drawn on the scale of the O S M. (6 in to 1 mile) Let the children add to the map one or two features which they know very well· e g mark the position of certain buildings by a letter, or draw lines representing a street Make reference squares on this map and use them for purposes of recording position by the method previously taught What is the position of the building that you have marked? (M4) How far is it from that building to the corner of High Rd and Brook St? Mark the position of the station in G6. Copy the railway route on the blackboard. Mark two or three "characteristic signs" showing a road above a railway (bridge) and a railway over a road, and let the children copy these on the reverse side of their maps Give the children one or two exercises in the drawing of routes with reference to direction and distance Help might be given by indicating the position of prominent points which the children could insert before drawing the routes Ask them to draw a map showing the way from the school to the station, marking any railway routes crossed.

7. MAPS—LAND UTILISATION

Method.—Prepare a local map showing land utilisation on a simple scheme The classification will, of course, vary according to the district, but where agriculture dominates some attempt should be made to indicate the different crops Separate cattle and sheep pastures; forest or barren land If the district is urban, mark the residential and industrial sections, put a special mark for an important division of work At first, print the description of the use to which the land is put. Soon the blackboard will present an untidy accumulation of names, too cramped to be easily read. How could this be avoided? Think of the method we used instead of writing on our maps the words "lowlands, uplands and highlands." Some of the words we have written are in close groups; sometimes the same word extends in a band across the map. How can we show the wheatfields clearly? In what way should we show the oatfields? Now we have coloured the whole map what should we do to help a stranger to read it? Tell how to make an index to the map on the blackboard Show the class several maps of various uses and ask them to read the map after explaining to them what the index shows Give exercises in reading such maps as the *Natural Vegetation of Africa*, the *Rainfall of Australia* (classified as heavy, moderate and slight) Ask the children to make a simple distributional map showing, by colours or by shading, the chief crops of India The teacher will give on an outline map the information required, with the words *Rice*, *Tea*, *Wheat*, *Millet*, *Jute* and *Cotton* printed in correct positions

8. MAPS—CONTOURS

Method.—Sketch on the blackboard the contours of the environs of the town and shade in the usual way the lowlands, uplands and highlands. Trace the trend of the valleys and discuss the best ways of reaching one point from another, observing the importance of physical features on routes. Mark on the map that you have made the points that are well known on the road between your town and the place to which you are going Join the points and notice the direction of the main routes radiating from the town centre Can you tell from your map which road has the most gentle slope? If you wished to travel from A to B, two points on different routes, how would you do so? (By going to the town centre and keeping to the main road) What distance would you cover by going this way? What is the shortest distance between A and B? Why do you choose the longer way? Mark the railway routes on the same map by using the conventional signs Does the railway route keep parallel with the road? Which route keeps to the more level surface? (Roads.) How do the railways avoid steep slopes? (Tunnels) Let the children make simple route maps superimposing these features on suitably contoured sketch maps.

Hints.—The success of the lesson will depend very largely on the correct choice of the contours to be included on the sketch map Each district should be mapped so that the influence of relief will be apparent, and as this depends on the relative altitudes, the vertical scales will vary. In a comparatively flat district the undulations should be mapped, as these are just as important in controlling lines of transport as the more definite features of hilly districts. Transparencies are easily made and effective in use, as they illustrate very vividly the point which it is desired to emphasise in this work, viz the correlation of human movement with natural features Once made of suitable size for blackboard demonstration purposes, the maps will last for a long time and will amply repay their preparation. Sometimes, especially where local conditions are favourable to the use of such illustrations, the road and the rail routes between two points may be shown in section. Here we may see how the railway engineer sometimes avoids gradients by cutting through steep hills with narrow bases

9. MAPS—PHYSICAL FEATURES

Method.—Proceed in the same way as in the previous lesson with a blackboard sketch of physical features. Revise from the map what has already been learned about the relief of the district If the surroundings are hilly, then some of the points will be known by name, and it is equally important that the valleys should be referred to by name Usually, a stream name is given to the valley through which the stream flows. Select the industries which you consider are important enough for inclusion Ask the children to suggest ways in which these may be indicated on the map. Several good methods may occur to the children, and it is for the teacher to decide which he should use. Letters, numbers, dots and shading have advantages for particular uses, but at this stage clarity should be the first consideration The symbols should be marked on the demonstration map by the teacher with the help of the children. The importance of easy access to industrial centres may be shown on this map, as the children will notice the concentration of factories in the main valleys along the easy lines of communication. If bleaching or dyeing is amongst the important trades, then the localisation of these on the slopes where the clear streams abound may be remarked, while quarrying on the higher and more rugged slopes will find inclusion in some instances. The association of relief and industry in rural districts is also clear, and the connexion can be illustrated by

one of the "dual" maps constructed on the same lines as the industrial map. Sheep pastures, cereal producing areas, orchards, grazing lands, etc, should be marked separately Before beginning to make their own maps, the children should be familiar with the signs on the teacher's map and be able to read it. Ask the class questions to ascertain that they understand the relationship between the various aspects mapped What is the industry on the highest land? Which industry is carried on nearest the road or the river?

Hints.—It is usually said that one map should serve one purpose, and at first a teacher is inclined to question the use of these dual sketch maps As the intention is to show a *relationship* between features, the map does not transgress the dictum Properly constructed to show only the main conditions, there will be no confusion of the mind as is the result of observing a map full of a multiplicity of signs On the contrary, the simple representation of two related conditions will do much to show the causal link, thus preparing the way for a feature in geographical work which should develop as the study proceeds The amount of work given to the children in these lessons will be decided by the teacher himself Some teachers may prefer to leave the work of combining the two maps to the children, while others would consider it necessary to complete their own maps and expect copies only It is well to remember that, as the maps are symbolic descriptions of a district, the child can only master the symbols by their frequent interpretation and use. At times, give an oral description of part of your district, or write a short description of it on the blackboard, refer to well-known points by name, and ask the children to map the district Further exercises in the reading and in the construction of dual maps may be given by grouping the maps showing — (*a*) physical features and rainfall, (*b*) routes and industries, (*c*) rainfall and reservoirs, (*d*) physical features and reservoirs

10. MAPS—SCALE

Method.—Use the maps of the district already made, placing before the class your own map showing the physical features What is the height of the highest land shown on this map? How far is it from the east side to the west side of this district? How far is it from the north to the south? Now exhibit a map of a similar size but including a larger area, one, if possible, having different physical features This map has more tints or more types of shading Instead of the three divisions shown on the first map, we have five divisions which we see marked against the index as *lowest, low, uplands, highland, highest* Where is our local hill shown on this map? Point out the hill and mark it on the blackboard map with a cross Other highland is also shown on this map. Is this highland to the east, west, north, or south of the local hill? Who has seen these hills? How far are they from here? Now examine the map to find its scale. From the previous answer, which everyone believes to be correct, we know that it is x miles from our hill to the hill shown at this point. How far do you think it is from the east to the west side of the map? If so much more land is being drawn on a map of the same size what changes must be made? (Everything is drawn smaller) Find the whole district that we mapped previously and draw bold lines round it. Cover the surroundings so that the reduced details of the region may be made more conspicuous, and so that they may more easily be compared with the sketch maps which the children have before them Notice that the hills which appear clearly on our first maps are less prominent against the higher lands shown on the present map. Contrast the lowlands in the same way, and question the class concerning the physical features on both maps In which part of this region is the highest land? (N., S, E, or W.?) Ask the question about each map in turn Where is the lowest land? Exhibit a map, drawn on a sheet

of the same size as the others, and coloured or shaded to show physical features. This map covers a greater area—the whole country may be included. Deal in the same way with your own district showing how small and unimportant the prominent local features have now become

Hints.—Try to bring out clearly the fact that the larger the area being mapped the less distinct are the highlands of your own district (Assuming paper of the same size is used for all the maps) It may be found helpful to represent diagrammatically the altitude of several points This can be done effectively by drawing lines to scale on the blackboard, one line representing the altitude of the local hill, while others represent chosen points on the larger map Notions of a vertical scale may be imparted in this way, and the twofold scales of the maps may show a rough correspondence Find what distance is represented by 1 in. on each of the maps that you use Contrast from calculations made concerning the maps in your atlas the north-south distance of selected lands. e g Australia, Africa, N. America, S America, Eurasia and Great Britain Then draw lines to a common scale to show the relative distances. In this way the misconceptions of size due to the similarity of the size of maps may be corrected Contrast, too, the vertical scales in a way that will illustrate the arbitrary use of colour tinting The Peak in England, coloured dark brown, is not 3,000 ft high, while parts of the Western Ghats are shown with the same colour although they exceed 6,000 ft. In connection with the map work at this stage of the course it will be a good plan to continue the recognition of continents from their shapes Continue the work of former lessons by asking the children to sketch, on graph paper if necessary, the different continents Geometrical figures will serve admirably at first Develop the exercise by proceeding to the production of a composite map. To do this, ask the children to stick the several small outline maps on a large sheet of paper, making an approximation of the distance between the land masses As a guide to the children exhibit a world map (Mercator) in front of the class

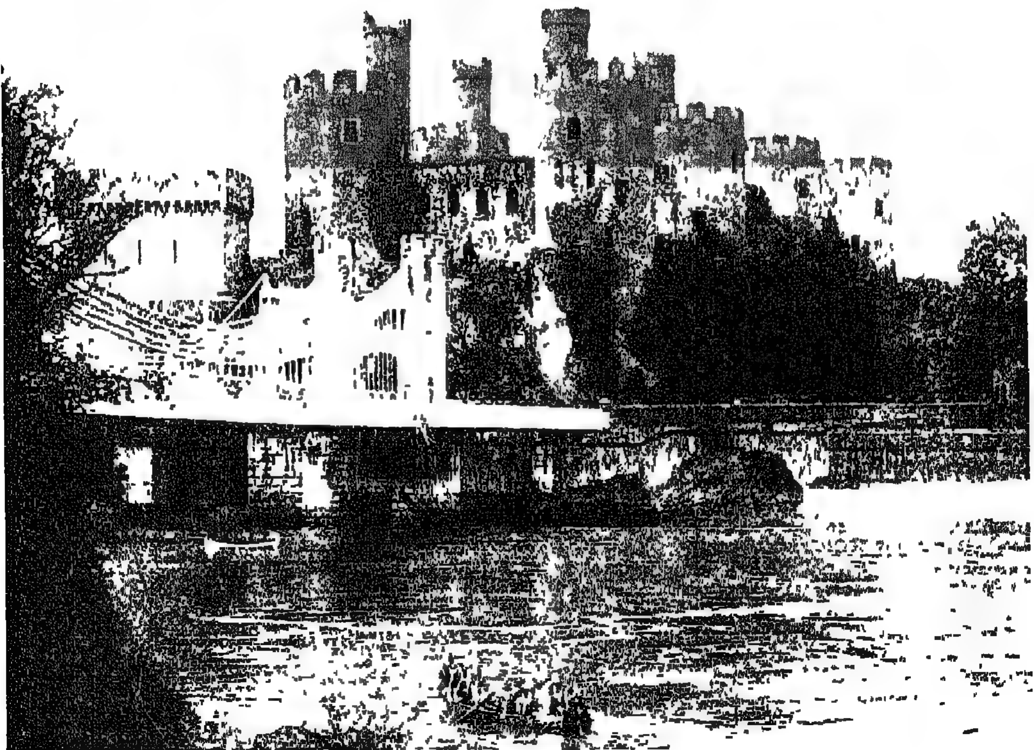
11. MAP DRAWING

Aim.—To train the children in constructing simple physical maps from given data

Method.—Revise the work done previously in the use and the construction of simple physical maps, by an examination of the local sketch maps Give practice in reading the map symbols and the recognition of certain features from their signs on the map, e g. hills, valleys, plains and plateaux. Describe a region to the children, and with their cooperation make a representation of it in sketch-map form on the blackboard Give as exercises for the children the mapping of districts set out in the following description The method of shading may be adopted as a substitute for the conventional colours and tints.

1. Represent a hill, rising above a large plain, by shading lowlands, uplands and highlands
   (Remember that this is not to be a map of an island, therefore the borders of the map will be shaded to show lowlands.)
2. Draw a map showing two peaks rising from a plain Show the level of the land in the same way as was done in the previous answer
3. A valley stretches from north-east to south-west across a high plateau Mark on a map the lowlands, uplands and highlands
4. Make a map of a district having a high plateau in the north From the plateau stretch two valleys which become wider towards the south-west and the south-east

Hints.—The art of mapping may be approached in very easy stages from the time that the child has begun to analyse scenery and understands how features are shown on a map Early examples given for practice may include scenic details from the locality with which the children are familiar Idealised districts should form part of the work, but try to avoid the making of artificial features in which the contour lines are too geometrical Point out that the line which is drawn around the summit or on the slopes of a hill is a line separating lands of different level In this instance it separates the highland from the upland



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CONWAY CASTLE

HANDWORK FOR THE GEOGRAPHY LESSONS

HANDWORK. I.

In the top form of the primary school a certain amount of practical geography of an elementary nature will be done. The object of the accompanying illustrations is to provide the teacher with ideas for simple forms of apparatus which may be made by the children and used by them in their lessons The models made in the top form may be useful in the lower forms and some of them might be passed on to the younger children to assist them in their lessons

Valuable observation work may be done by recording the lengths of shadows cast by the sun at varying hours of the day and at varying seasons of the year. The first model shown is that of a simple shadow measurer for which a large piece of card, a cork and a meat skewer are required. The upright (Fig. 1 A) is made by slicing off about $\frac{1}{3}$ of the cork and thrusting the skewer in it at right angles. A set square is used as shown in the diagram to ensure that the angle is true Next (Fig 1 B) the board is prepared by drawing the long north-south line, and the shorter east-west line at right angles At the point of intersection the cork base of the upright is glued, and alongside the north-south line a paper scale, graduated in inches and half-inches, is pasted. The measurer is used in the playground when the sun is shining in order to record the length of the shadow cast.

In the lower forms, the children will probably have had lessons on the cardinal points and the mariner's compass The next model shown is that of a simple working compass constructed from material readily available The first step (Fig. 2 A) is to prepare a compass card This is made by drawing two concentric circles on thin card, striking out the points by using a set square, then cutting out the central portion with the point of a knife. Next (Figs. 2 B, C and D) two narrow cross-pieces are cut The first is provided with a rectangular " bridge " in the centre, from the lower side of which a small round depression is made by pressing a rounded point into it The second strip is flat and has a hole in the centre A steel safety-razor blade is now magnetised by stroking it (one way only) with a magnet This magnetised blade is glued to the lower side of the flat strip. Fig 2 E shows how the parts are assembled upon a needle stuck into a slice of cork The strips are glued to the lower side of the compass card. A is the compass card, B is the bridge strip, C is the straight strip with the blade beneath, E shows two small glass beads glued above and below the straight strip, D shows the needle and F the cork Fig. 2 F shows a simple box construction which will hold the compass and prevent its being affected by draughts. The completed model is shown in Fig. 2 G

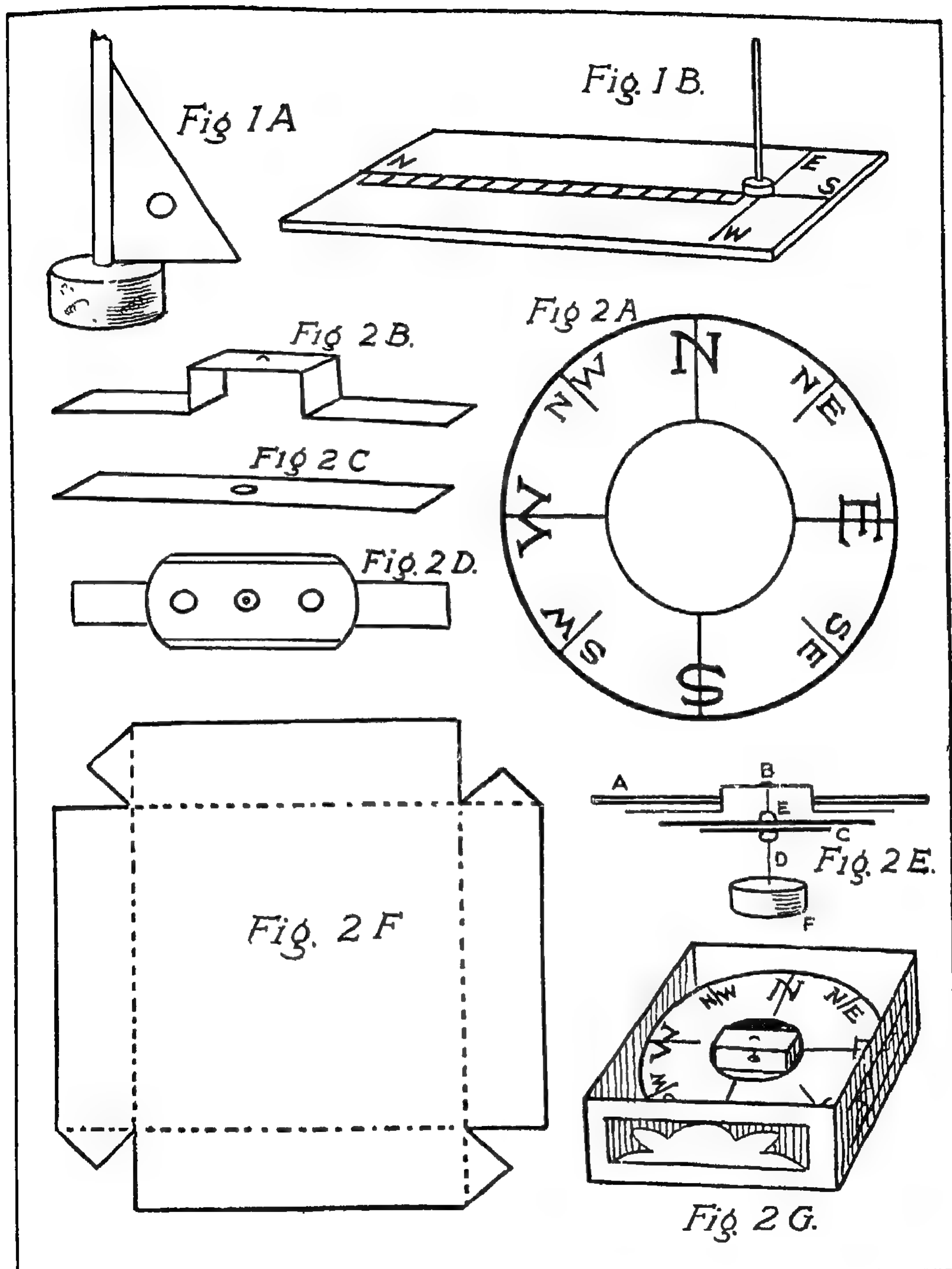


PLATE I

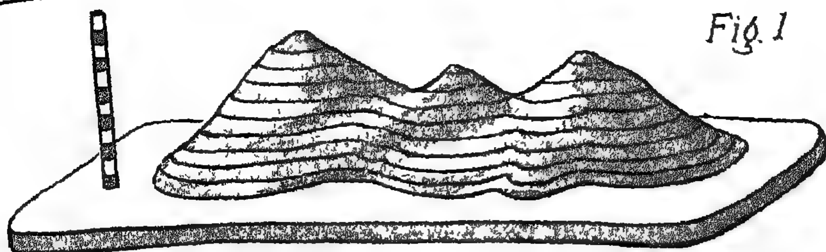
FIG 1 SHADOW MEASURER FROM CARD, CORK AND MEAT SKEWER
FIG 2 MARINER'S COMPASS FROM CARD, NEEDLE, BEADS AND SAFETY-RAZOR BLADE

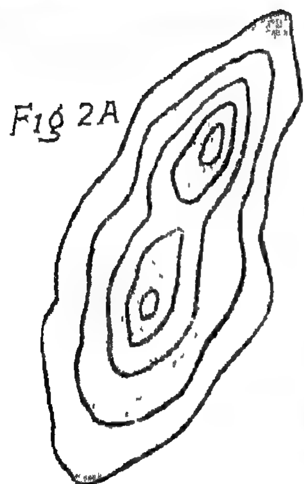
HANDWORK. II.

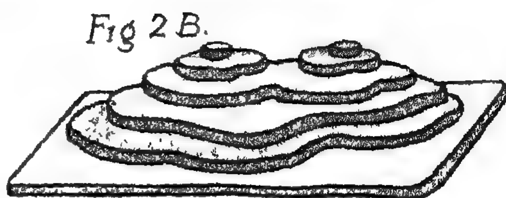
The practical work illustrated on the accompanying Plate deals with the first study of contours. Fig. 1 shows a simple form of apparatus to teach the children what contour lines really are For this model a supply of plasticine will be required. On a wood base, a model of an island, with bays, mountains and valleys, is built up On one corner of the base a stick graduated in quarter-inches is fixed. The whole apparatus is placed in a tin bath or other receptacle and water is slowly poured in until it is level with the first quarter-inch mark The children, with the point of the needle tool, lightly scratch round the water level on the model island; then more water is poured in until the next graduation mark is reached Again the line is scratched and the process is continued until the island is immersed The model is now removed from the water, and when viewed from above will show a complete contour "map" of the island. The teacher should stick some lengths of blue wool down the valleys to represent rivers, when the children will see how rivers follow contour formation.

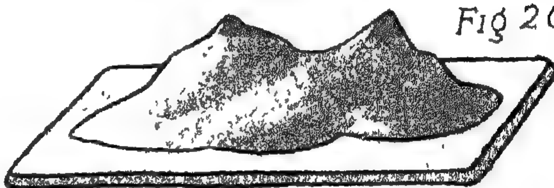
Another useful method of teaching contours is to provide the children with a simple contour map (Fig. 2 A) and allow the class to cut out from thick cardboard the various sections These are then glued one upon the other (Fig 2 B) and finally (Fig 2 C) the "steps" are filled in with clay or plasticine to give a regular outline Boys might like to make this model in three-ply wood from a tea chest, cutting the wood with a fretsaw.

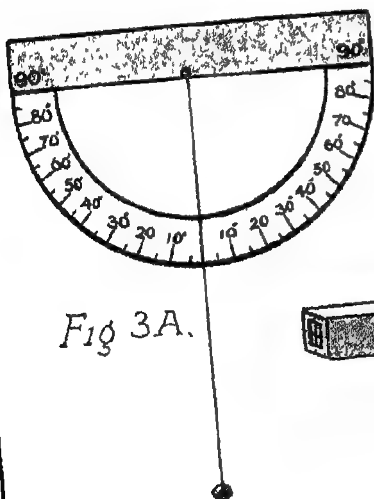
The next model is that of a simple clinometer to measure the angle of elevation of the sun or of a high building The first part of the model is the recording dial (Fig 3 A), which is a semi-circular piece of card graduated in degrees and fitted with a plumb line consisting of a piece of thread with a weight attached Next, a long square tube is made from cardboard, and across each end two intersecting pieces of thread or thin wire are fixed, Figs 3 B and 3 C. The dial is glued to the tube, and is used by holding it in the right hand and sighting through at the object, adjusting the tube until the cross-wires at either end coincide. Fig. 3 D.

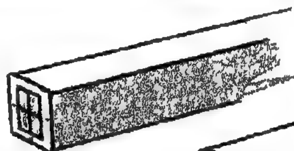


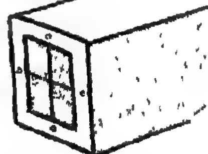












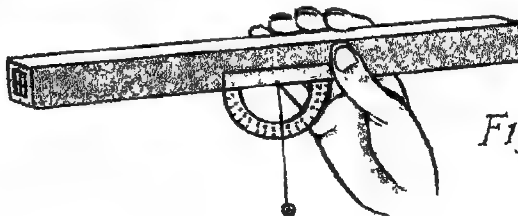


PLATE II

FIG 1 PLASTIC MODEL TO TEACH CONTOURS

FIG 2 MODEL MADE FROM SUPERIMPOSED PIECES OF CARD TO TEACH CONTOURS

FIG 3 SIMPLE CLINOMETER IN CARD

HANDWORK. III.

Although detailed records of an accurate nature respecting the actual velocity of the wind are out of place in the primary school, much useful observation of a comparative nature may be conducted with advantage.

The first model shown is that of a simple anemometer made from easily obtainable material For the cross-pieces, a plasterer's lath will be wanted This is sawn into two and the two portions are fixed together with small nails at right angles. A set square should be used to ensure that the angles are true. Exactly at the centre of the joint a small hole is bored with a fretwork drill and a large glass bead is glued above and another below, Fig. 1 A Next, four cups are tacked at each end of the cross-piece, Fig 1 B. These cups may be either halves of ping-pong balls, or halves of tin globes which are used for advertisements of the "World" The supporting upright (Fig 1 C) is a cotton reel into the hole of which is fitted a part of a meat skewer, glass-papered to fit if necessary. Into the centre of the skewer, which is cut off level with the top of the reel, a knitting needle is thrust, and on to this are slipped a number of glass beads The reel is glued to an inverted wooden box (Fig 1 D) and the parts are arranged as shown One of the hemispheres is painted red, and a meat skewer, also painted red, is fixed at one corner. (This is not shown in the drawing) To make a record, two children are required, one to stand with a watch to time exactly the passing of a minute or two minutes, the other to note the number of times the red cup passes the red upright during the prescribed time

For the lower forms, a wind vane will be useful. Using the cotton reel, knitting needle and beads as in the above model, a vane may easily be constructed by cutting off a short length of curtain rod, and making saw cuts transversely at each end. Into the saw cuts, an arrow head and point are thrust, Fig. 2 A These may be made of cardboard, or of thin tin from a cocoa tin which can be cut with an old pair of scissors. Again an inverted wooden box is used for mounting the vane after the shaft has been drilled with a fretwork drill, Fig 2 C The cardinal points are cut from card or tin and mounted on portions of a meat skewer, Fig 2 B

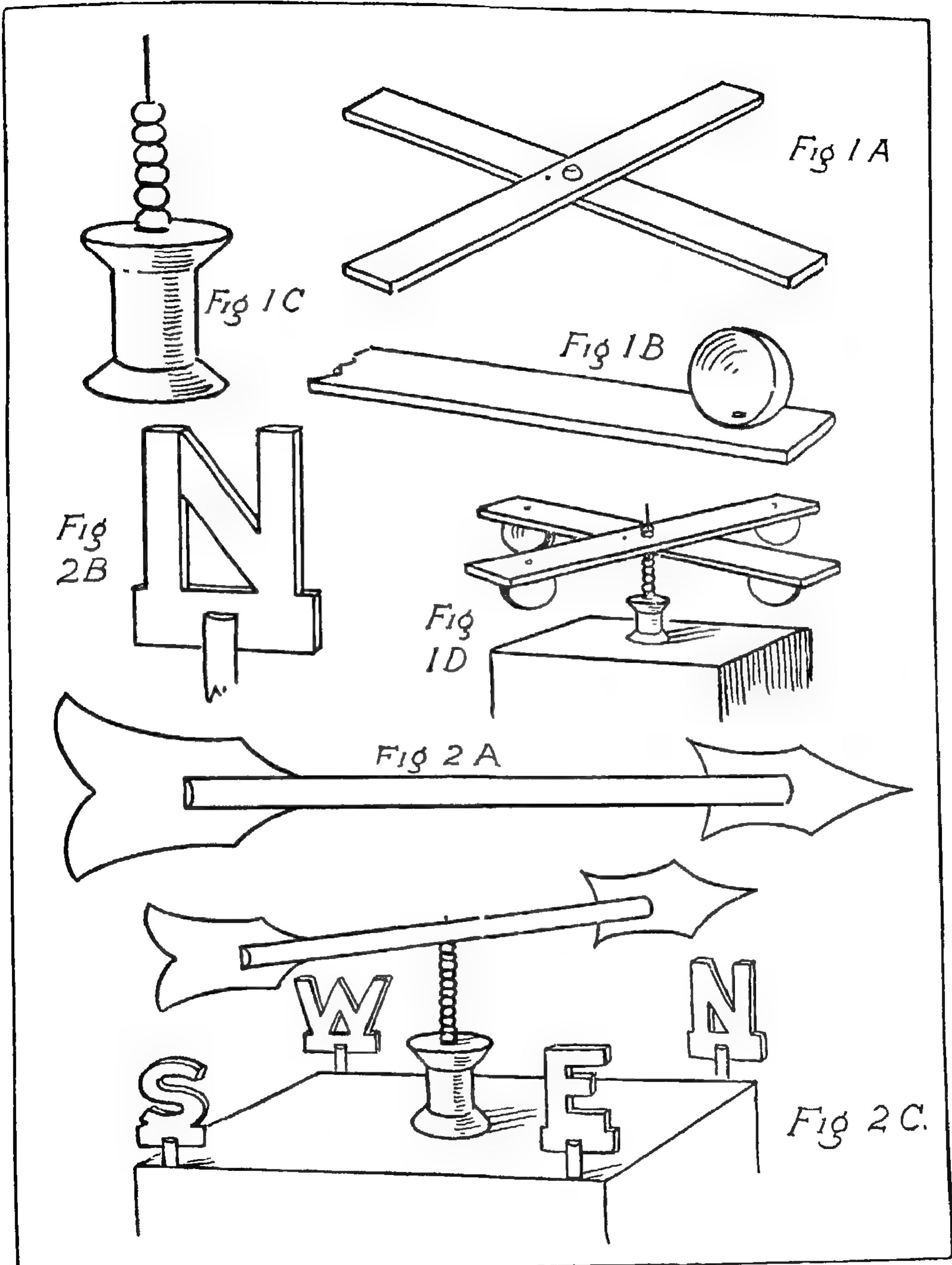


PLATE III

FIG. 1 A SIMPLE ANEMOMETER MADE FROM A LATH, PING-PONG BALLS, A COTTON REEL AND BEADS
FIG 2 A WEATHER VANE MADE FROM CARD, A CURTAIN ROD, A COTTON REEL AND BEADS

HANDWORK. IV.

Passing on from observations of the length of the sun's shadow our next study is that of the sundial. The angle of the gnomon of the sundial depends upon the latitude of the place where the dial is used If the children are familiar with the use of the protractor, no difficulty will arise in the construction of the sundial, and in some primary schools this work is covered Where necessary, hectographed "angle-measures" should be prepared by the teacher and distributed to the children for them to trace round during the construction of the model

The first model shown on the accompanying Plate is that of a vertical sundial Here the angle of the gnomon is the complement of the angle of the latitude of the place In most parts of Britain this will be approximately $90^\circ - 53^\circ = 37^\circ$. The mount for the gnomon is like a picture frame, Fig 1 A For this, a piece of stout strawboard should be used and bound at the edges with binding strips. To the front, a piece of dark pastel paper is pasted, then on the top of this is added another smaller piece of contrasting colour. Finally, a piece of white paper is added to serve as the dial Down the middle line a cut is made to receive the gnomon. The board may be decorated with a simple design in poster paint Fig 1 B shows the construction of the gnomon Two of these are cut and pasted together (except at the flaps), the flaps are thrust through the cut on the board, folded outwards and stuck to the back Fig 1 C shows how the support for the back of the frame acts, and Fig 1 D the development of the supports Two supports are made (Fig 1 E) and stuck together as shown The curves are made by rolling the free ends of the basal parts round a pencil To calibrate the dial, it is taken out into the sun at different hours of the day and the positions of the shadows are marked lightly with a pencil The lines and figures are afterwards filled in with Indian ink, in the classroom

In the horizontal sundial, the angle of the gnomon is, for this country, roughly 53°, i e the actual latitude of the place. Again, a base is prepared, Fig 2 B This may be either a square of card or the base of an inverted cardboard box To this a circle of white paper is pasted, free scope being allowed for artistic decoration Note that the north–south line passes through the centre of the circle, but the east–west line does not. Two gnomons are cut from thinner card (Fig. 2 A) and fixed into a knife cut on the dial as before, with their flaps bent outwards on the under side The dial is now calibrated in exactly the same manner as that described in connexion with the previous model

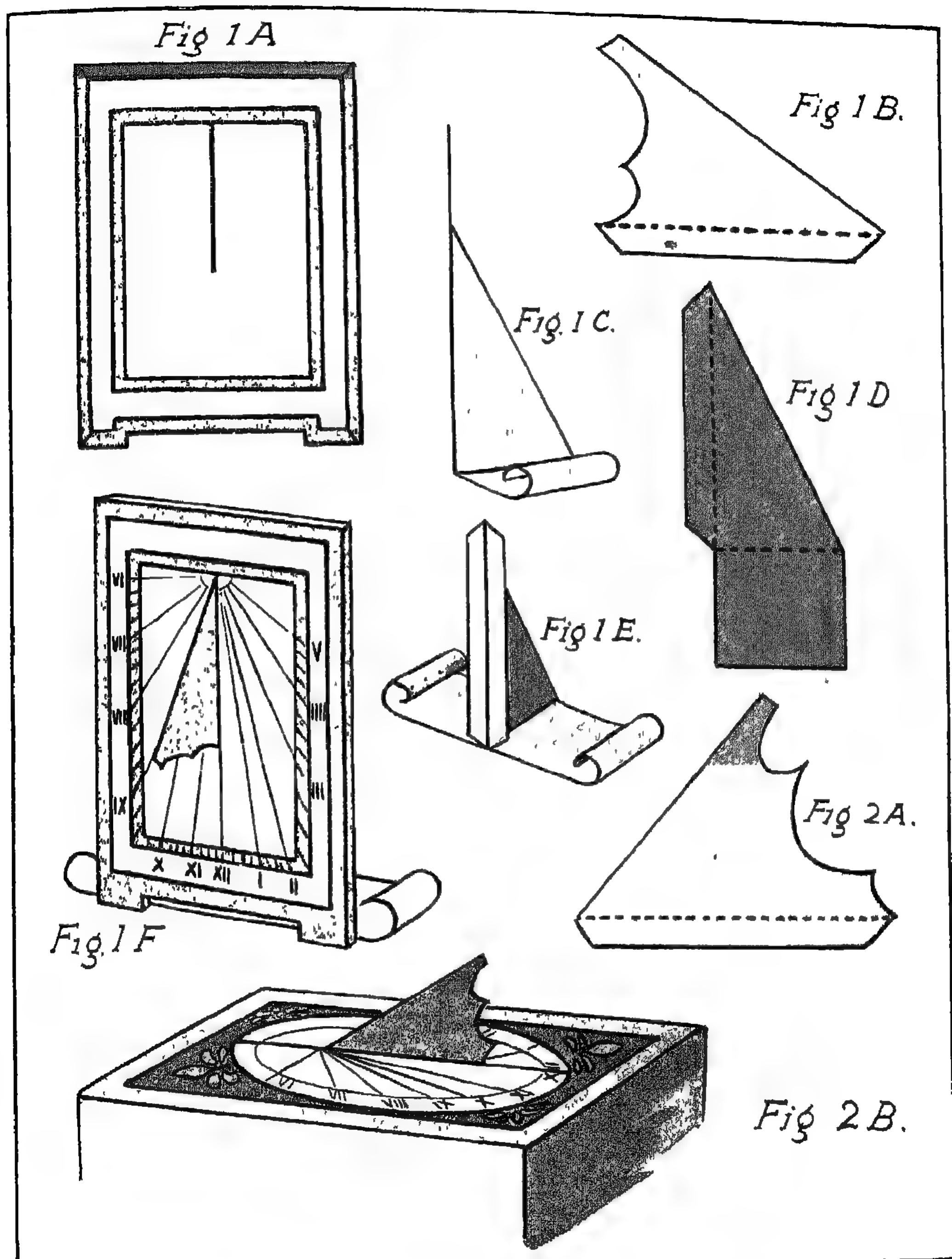


PLATE IV

Fig 1 Vertical Sundial made from Card

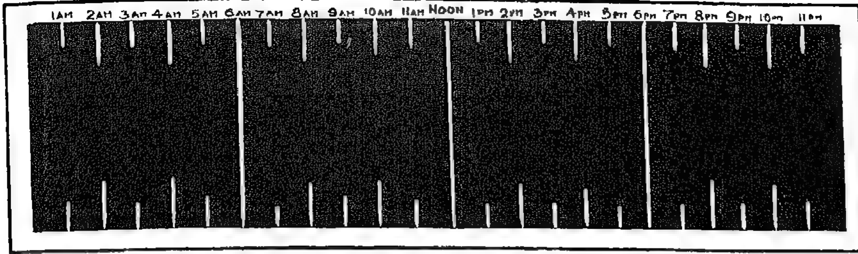
Fig 2 Horizontal Sundial made from Card and Mounted on a Box Top

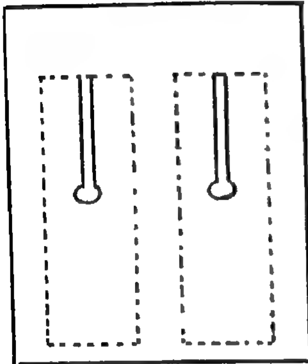
HANDWORK. V.

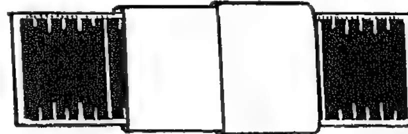
In the highest form of the primary school, useful observational work may be carried out profitably in connexion with the length of daylight, that is to say the varying periods between sunrise and sunset throughout the year The accompanying Plate shows how a simple daylight recorder may be constructed from stout cardboard and thinner card or thick paper This may be made on a small scale, so that each pupil may have a recorder—or a larger one can be constructed for use in the classroom The exercise gives scope for careful cutting and pasting, and also for subsequent art work in the colouring and lettering.

Fig. 1 A shows the basis of the model, which consists of a long rectangular sheet of card, covered with brown or pale grey pastel paper. To the front of this is pasted a sheet of white drawing paper to leave neat margins all round The drawing paper is given an all-over wash of dull black, and when this is dry, the three dividing lines and smaller lines to show the hours are added, using white ink and a pen. Next, as seen in Fig 1 B, two large pieces of drawing paper are taken, folded over and pasted so that they will fit over the prepared base-board They are made to such dimensions that one will slide over the other. These two "slides" are painted bright yellow to represent daylight Fig 1 C shows the finished recorder, the ends of the slides being placed at the hours of sunrise and sunset respectively Graphs of the length of daylight should be kept by the children in their notebooks

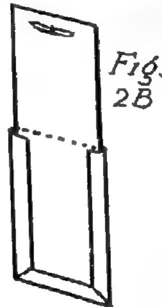
Another useful form of recorder for practical geography is that of a graphical temperature recorder. For this (Fig 2 A) a sheet of stout card is required On the front of this, towards the top, two thermometer shapes are drawn, and with the point of a sharp knife these are cut out Behind these, two thin card "pockets" (Fig. 2 B) are glued Their position is shown by the dotted lines on Fig 2 A. Also, two thin cardboard slides are cut to fit into these pockets so that they may be raised and lowered in them with ease To act as handles to the slides, two small paper fasteners are fixed at the top, one in each, as shown, so that the knobs appear at the front A good deal of space is shown at the bottom of the mounting card This is to provide room for a calendar pocket to be fixed The object of this pocket is to contain a monthly graph (Fig 2 C) of the daily temperature The completed model is seen in Fig 2 D The thermometer shapes are graduated . the left-hand one is to record "Yesterday" and the right-hand one "To-Day." Temperature is taken daily in the playground, the cardboard slide is lifted or lowered to the appropriate position, the previous day's temperature is set, and, finally, the dot on the graph is added

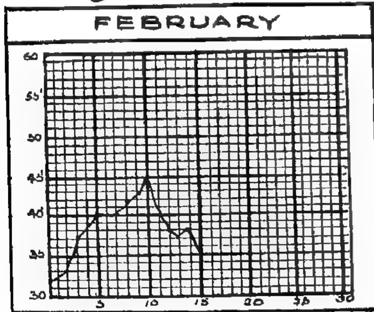












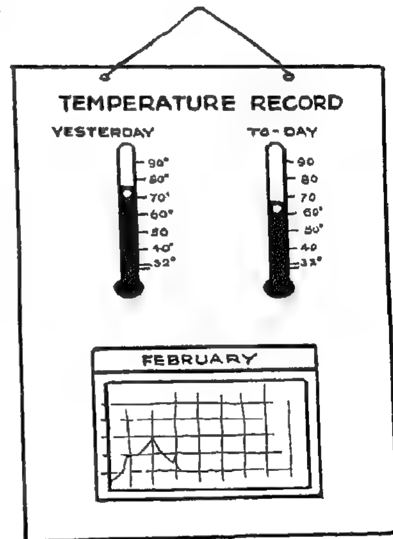


PLATE V

Fig. 1. A Daylight Recorder in Paper and Stout Card
Fig 2 A Classroom Temperature Record in Stout Card, Paper and Thin Card

HANDWORK. VI.

THE FLAGS OF THE BRITISH ISLES

It is usual when studying the geography of the British Isles to give the children some information concerning our national flags. The following suggestions for handwork in this connection will be useful.

Fig 1 A shows a child's model of the Union Jack, which is made by folding. A long rectangular strip of drawing paper is required, and this is folded into three divisions to form three smaller equal rectangles as shown in the diagram. To the middle rectangle the design of the cross of St Andrew of Scotland, a white cross on a blue ground, is drawn. To the *back* of the left-hand rectangle the cross of St George of England, a right-angled red cross with white border, is applied, and lastly, the red diagonal cross of St Patrick of Ireland is drawn (Note that in the diagram, for purposes of elucidation, the two outside crosses are shown on the *front* of the sketch, but in making they are drawn on the *back*) The flags are coloured and the backgrounds of the outside crosses are cut away, so that they may be folded over to form the complete Union Jack, Fig 1 B Fig. 2 shows how the small flags made by the children may be mounted in the corner of a large cross of St George, red on a white ground, to produce the flag of the British navy—the White Ensign.

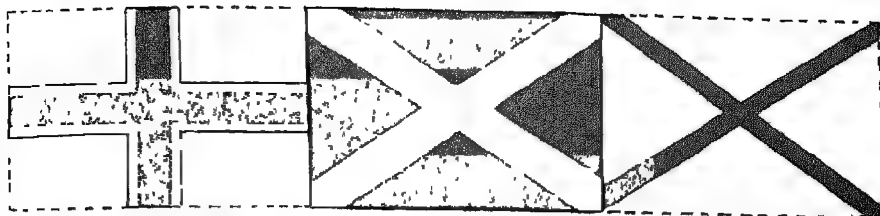
Our next suggestion is useful for classroom decoration. The children should cut large shields of strawboard (using an opened-out, folded, paper shape as a pattern) and mount the national emblems, Fig. 7. Simple designs for tracing are illustrated These should be traced and hectographed by the teacher, after which the children may tint them, preferably in poster colours of the correct tint They are then cut out and stuck to the shields, and later, if desired, they are given a coat or two of white copal varnish Some of the boys might cut the shields from three-ply wood with a fretsaw.

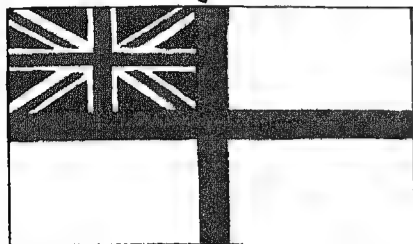
Fig 3 shows the Harp of Ireland, which should be mounted on to a blue shield, after it has been coloured a bright golden yellow.

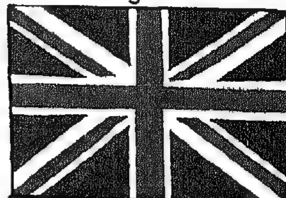
Fig 4 shows the Lion of Scotland, to be painted red and pasted on a yellow shield.

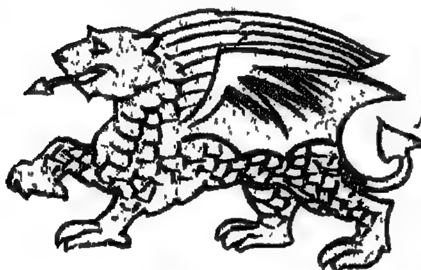
In Fig 5 is seen the Dragon of Wales, again of red This is mounted on a shield divided horizontally—the upper half white and the lower half green

Lastly, in Fig 6 is given the British Lion, to be coloured yellow and mounted on a red shield.

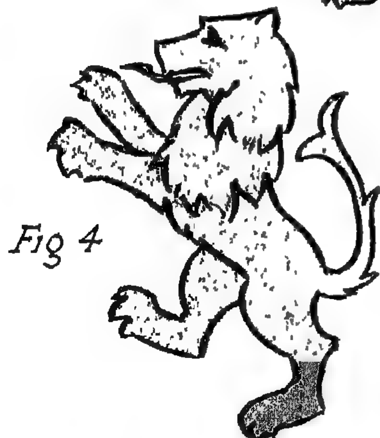














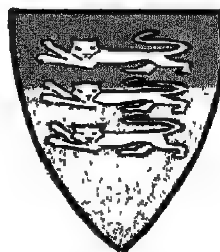


PLATE VI

FIG 1 MODEL IN PAPER, ILLUSTRATING THE COMPOSITION OF THE UNION JACK
FIG 2 BUILT-UP MODEL OF WHITE ENSIGN
FIGS 3, 4, 5 and 6 EMBLEMS OF IRELAND, SCOTLAND, WALES AND ENGLAND
FIG 7 CLASSROOM DECORATION OF MOUNTED SHAPES ON CARD OR THREE-PLY WOOD

HANDWORK. VII.

A GEOGRAPHICAL REFERENCE BOOK

The object of this exercise is to supply the child with a home-made reference book, to which as many pages as desired may be added from time to time during the term It forms a useful book-making project with a geographical bias In the classroom, it will be found helpful as an aid to self-study and as a ready means of enabling the children to revise constantly and quickly those geographical facts that must be memorised during the school course

The following materials are required —

1 large sheet of wallpaper, for covering.
2 cards to form the front and back covers.
1 strip of wallpaper to act as a hinge.
2 sheets of wallpaper for lining.

Fig. 1 A shows the layout of the several parts The sheet of wallpaper is pasted, and on to it are placed the two cards, A and B, $\frac{1}{4}$ in apart to allow for the fold. With the scissors, the corners of the paper are cut at an angle of 45°—not right up to the card corners, but about $\frac{1}{10}$ in. from them Next, the hinge piece, cut flush with the top and bottom, is pasted over the middle, and the four extending sides of the covering paper are folded over and stuck down.

The cover will now appear as seen in Fig 1 B, and the two sheets of lining paper are pasted and stuck down to cover X and Y

The next task is to prepare the pages of the book. Single sheets of drawing paper are taken, folded at the middle and stuck together at their edges so that they will fold together like the folds of a concertina. It will be a good plan to start with two sheets, thus making four folds. Each fold is then divided with a vertical median line, and titles are added in Indian ink as shown in Fig. 1 C These titles will depend upon the particular type of geography the teacher wishes to emphasise. A few suggestive headings are shown on the diagram

Now comes the final fixing in of the book to the covers The back of the first sheet of the note chart is pasted all over and fixed to the inside of the cover—at X in Fig 1 B. The completed book is seen with four folded leaves extended in Fig 1 D, but, as mentioned previously, additional leaves may be stuck to the end of the fourth leaf edge at any later time, so that the book is always capable of extension.

[This course of lessons in Handwork for History and Geography has been written by E E Elcombe]

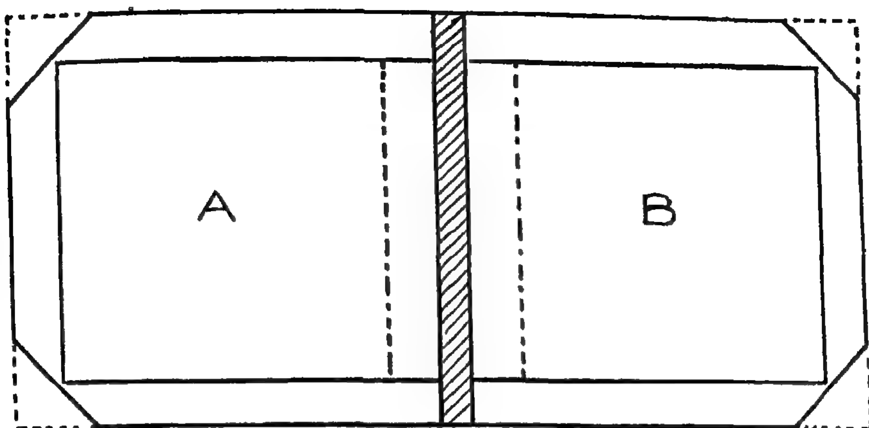


Fig. 1C.

Mountains	Rivers	Seaports	Industries.	Railways	Exports	Imports	Rain Fall

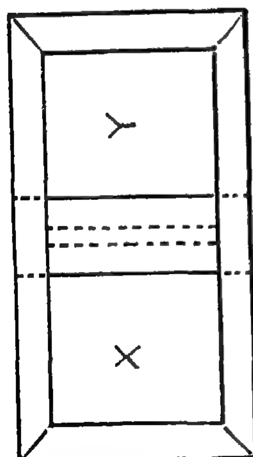


Fig 1B

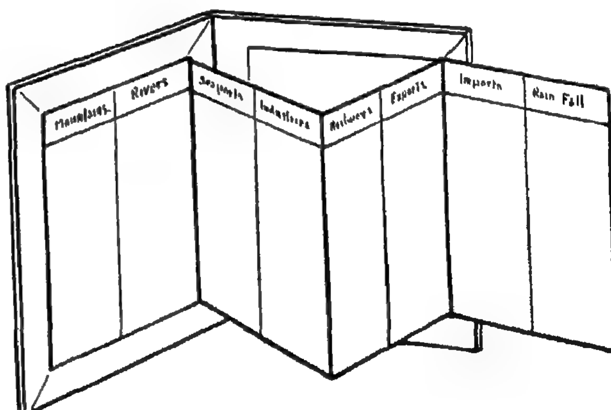
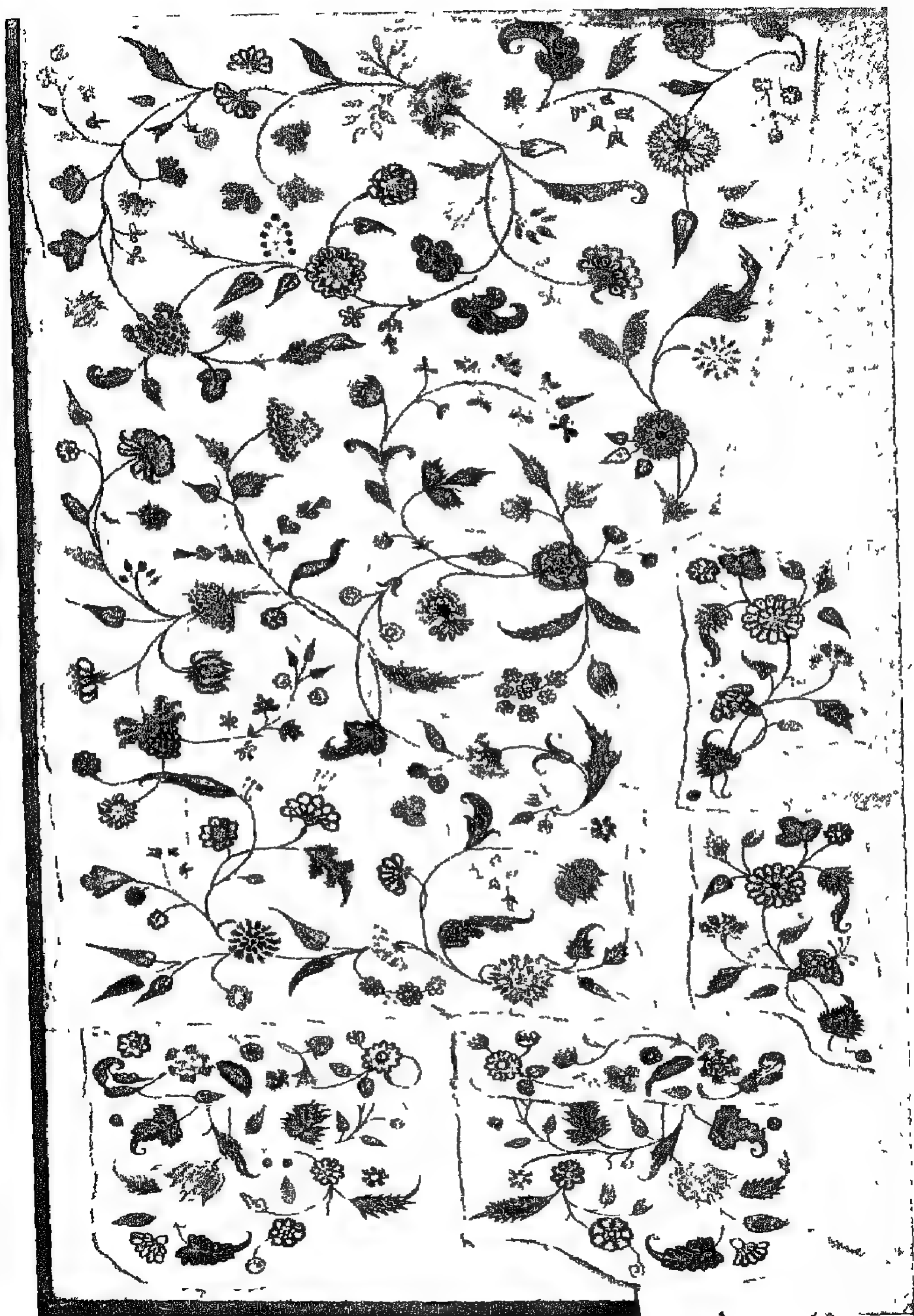


Fig. 1D.

PLATE VII

A GEOGRAPHICAL REFERENCE BOOK IN THICK CARD AND FOLDED PAPER

THE TEACHING OF DECORATIVE NEEDLEWORK IN THE PRIMARY SCHOOL



[Crown Copyright   Victoria and Albert Museum

PORTIONS OF A CHILD'S LINEN FROCK   EARLY EIGHTEENTH CENTURY

A THREE YEARS' COURSE OF DECORATIVE NEEDLEWORK FOR CHILDREN FROM EIGHT TO ELEVEN YEARS OF AGE

THE course of decorative needlework set out in these volumes begins with the second year in the primary school (see Vol. II), and is intended to cover work for a period of three years In the following pages the work for the third year of the course of decorative needlework is given.

GENERAL INTRODUCTION

"It seems as if the moment the best is attained, men, ceasing to struggle for the better, fall back at once hopelessly and become mere imitators They no longer follow a type, but copy a model, and then copy the copy. Imitation is a precipice, a slow descent through poverty of thought into the chaos of mannerism, in the place of style"

Needlework as Art, by Lady M. Alford, 1886

Throughout the three years' course set forth in this book, it has been suggested that, as far as possible, the designs should be *original* In the paragraph quoted above, Lady Alford justly sums up the results of blindly copying the labours of a bygone age To-day, it is futile to imitate slavishly even the finest achievements of our ancestresses, their designs belonged to their own era and do not express the ideas of our day Mere imitation suggests that, though industry is not dead, creative ability and independent thought are dormant Another consideration is that the colours produced by modern aniline dyes look incongruous when worked into old designs In decorative needlework, as in all human effort, we must progress

"There is a better than your best"—was a remark frequently made by a certain headmistress to her pupils Every designer at some time achieves a design which she believes to be the best she has ever done; to the true artist this knowledge is a further stimulus to create the ideal, while the indolent is inclined to rest on her laurels, and merely repeat the supposed masterpiece with slight variations—an example of the "dull monotony of change." The indolent person, self-satisfied, will never advance beyond a certain point, unless a clear-sighted friend, cruel only to be kind, tells her the truth and rouses her to put forth her best powers.

At the same time, the study of decorative needlework executed in another age, and under different conditions, can be invaluable and stimulating. How interesting it is to notice the special effects gained by the use of different stitches, and to adapt the knowledge in working modern designs!

In the illustrations on pages 532 and 535 are shown some historic examples of decorative needlework, in which will be found some of the stitches suggested for the work of this year The woman's headdress is English, late sixteenth century, and is embroidered with silk and metal threads on linen. Of primary interest to us is the buttonhole stitch used for the leaves The remainder of the embroidery is worked in plaited stitches.

The illustration on page 532 shows portions of a child's linen dress, early eighteenth

century, embroidered in chain stitch with silk Both the dress and the headdress are to be seen in the Victoria and Albert Museum, London, and they show what beautiful results may be gained by the right use of simple stitches

During this year, the children will continue to add to their tool pochette any fresh appliance needed in executing the work for the period At the end of the course, each girl will thus have a well-stocked tool pochette ready to take with her to the senior school where more advanced work will await her.

As the scheme is progressive, some of the articles in this year's course call for more work than those made in the previous years Some of this work might well be done at home voluntarily, for the pleasure of doing it; the girls will thus acquire the "hobby habit," such a solace and recreation in later life.

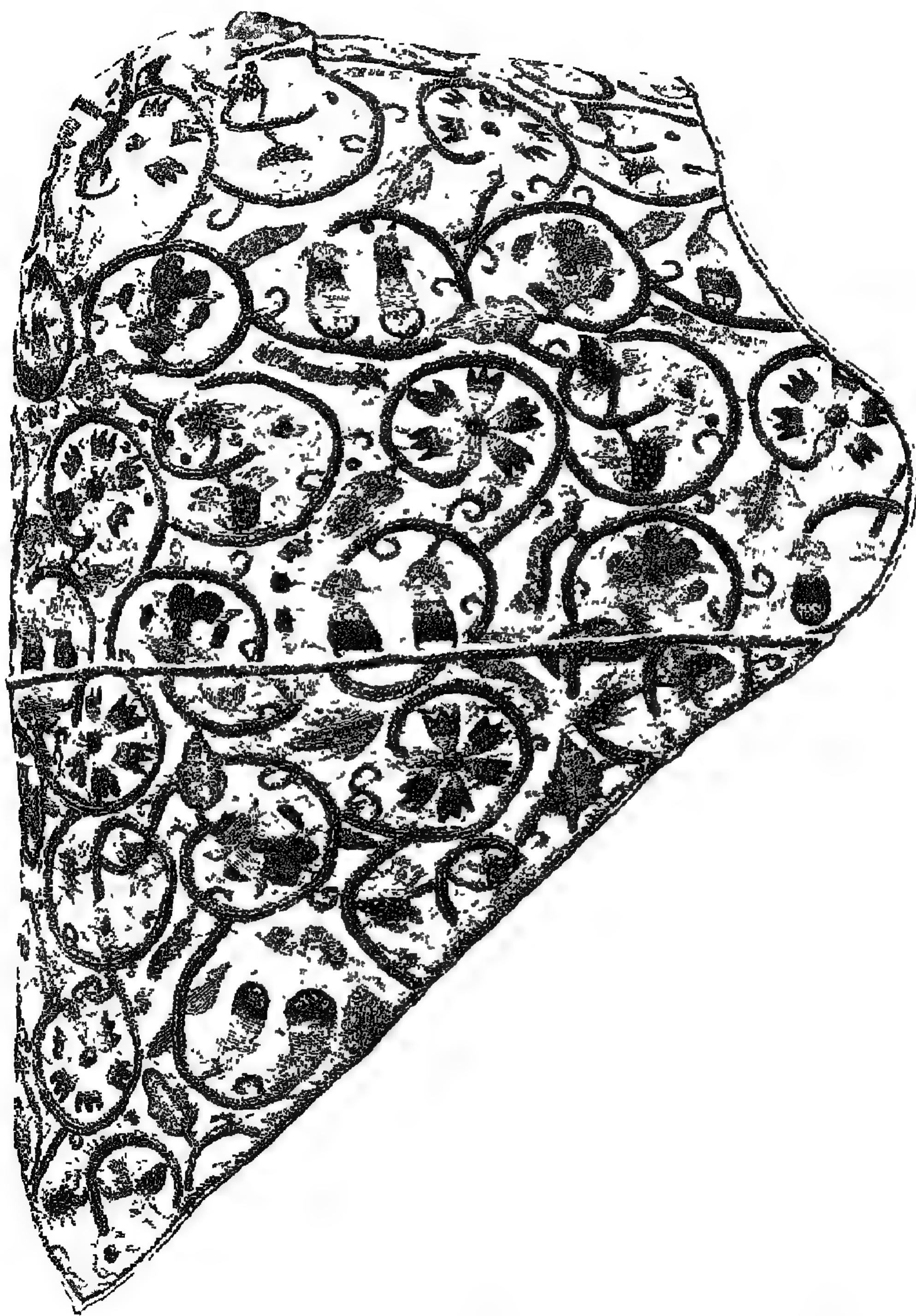
Lesson IX. in this year's work introduces the employment of silk by those pupils who have acquired sufficient skill to work with a thread that is rather frail and easily damaged. Of course, it is not at all essential that silk should be substituted for cotton; but the privilege of embroidering in a beautiful silk thread is to the pupil a recognition of her superior skill, and an encouragement to gain still further dexterity A few new stitches appear in this year's work, the remainder are old friends whose employment has been extended

One further word about designs The illustrations in the various sections are intended to stimulate interest, but they should not be copied *Every pupil should try to invent her own designs.* It will occur, of course, that with the best effort in the world, a certain child will fail to produce a design that either pupil or teacher consider worth carrying out in needlework, and, on the other hand, another child will invent several good designs. Accordingly, the child who has not succeeded with her own idea may carry out the scheme invented by her more successful fellow pupil. In such a case the pupil who has invented several successful designs must first choose for herself, from those she has drawn, the special design she prefers, and then the less successful child may choose from the remainder. It should not, however, be taken for granted that because a pupil has failed over one type of work she will necessarily fail over another, probably at the next attempt she will be successful

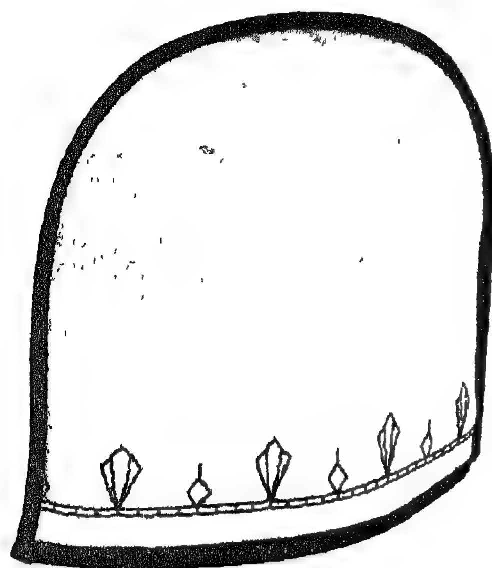
I. A TEA COSY DECORATED WITH A DESIGN OUTLINED IN DOUBLE RUNNING

THE first three lessons in this year's work are devoted to making the linen for that essentially British institution, "Afternoon Tea" A tea cosy, tray cloth and tea serviette will be dealt with in turn The same pattern is used on each article and the alterations necessary to make the design fit will be considered as the problems arise

Double running was used to decorate the toothbrush holder in Lesson IV in the previous year's work The designs, and especially the borders suggested, were very simple, and no serious difficulty would be encountered in adapting those designs in order to make the corners work out evenly and match one another. In this, and the two succeeding lessons, double running is again the form of stitchery used, but for each article certain adaptations are necessary if the design is to occupy its space successfully Fig. 2 shows the design used on the tea cosy in the photograph A strip of pattern was needed to go across the



WOMAN'S HEADDRESS LATE SIXTEENTH CENTURY



TEA COSY (FIG 1)

bottom of the cosy Attention was focused on making a pattern that could be executed in double running and that was suitable for the purpose for which it was intended, no other considerations were taken into account Figs 3 and 4 show two more patterns that could be used instead of the one shown in Fig 2

Designs executed in double running look very attractive on other articles besides household linen Since the stitch combines clearness with simplicity, it is particularly suitable for decorating the hem of babies' frocks or belts, and of pockets and straight collars and cuffs on children's frocks

Small, blunt, rug needles can be added to the tool pochette The following classroom tools and materials will be required

Cream or white loosely woven linen
D M C *coton à broder*, No 12 or 16, in strong, clear colours.
Coloured linen for bindings to match the *coton à broder*
Small rug needles
Tacking cotton.
Large cutting-out scissors
D.M C sewing cotton No 40 to match the coloured linen used for binding
White sewing cotton No 40
Cotton wool for padding the tea cosy
Soft white calico or some similar material for making the pad for the tea cosy
Squared paper, HB pencils, rulers

The tea cosy illustrated in Fig 1 is made of cream linen, the double running is executed in flame-coloured embroidery cotton and the binding is of flame-coloured linen that matches the embroidery cotton The embroidery cotton used for double running needs to be of a strong, definite colour, otherwise the pattern will not stand out clearly, but will look insignificant and weak, for the outline of the pattern is dependent on a single thread

The tea cosy is made from two pieces of linen each measuring 10½ in. by 9 in One long side on each piece is bound with coloured linen cut on the bias, this forms the bottom of the cosy when finished These bindings should be cut 1 in wide, for when the two sides of the cosy are finally bound together, both sides of the binding will show A binding cut 1 in wide allows sufficient material for the two sides to be made almost identical

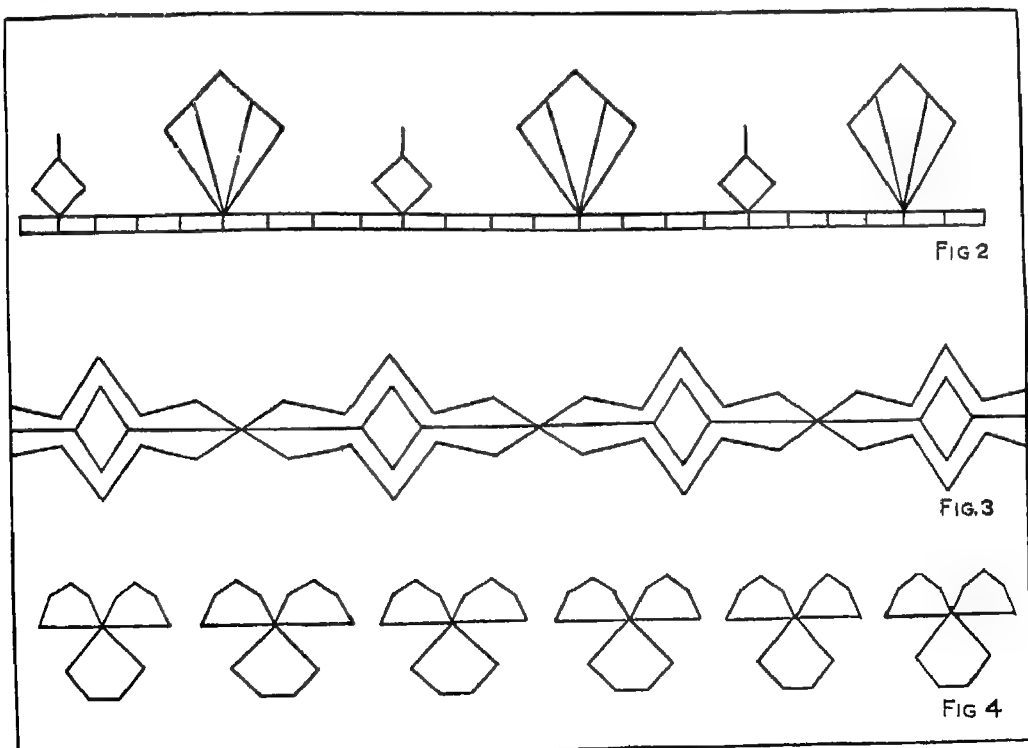
The pattern suitable for decorating the hem should be worked out to scale on squared paper, this is then used as a working drawing

The method of planning the pattern so that the stitches will work out evenly was explained in Lesson IV in the previous year's work (see Vol III, page 675) One unit of the pattern on the paper is best worked out in the manner shown in Fig 5 of that lesson, in order to avoid mistakes when it is being worked on the linen with the needle The design is put on the linen ½ in above the inside edge of the binding, starting with the bottom row

When all the decoration is finished, the two sides of the cosy are pinned together with the bound edges matching A paper pattern cut the required shape is then

pinned on and the cosy is cut out, allowing ½ in. turnings round the curved sides The pattern is taken off and the sides of the cosy are tacked together Bias binding is tacked on, ½ in. from the cut edges, the edges of the cosy and of the binding lying on each other. At both ends of the binding ½ in is turned in The binding should be stitched on securely by using fine running stitches and frequent back stitches Machining, however, is more effective if the children are able to use the machine All the tackings are taken out when the stitching is finished and the binding is turned over and slip stitched into place. The binding should be brought quite over the running or machine stitches, and the slip stitching should be as nearly as possible invisible, as both sides of this binding will show. The ends of the binding should be neatly top-sewn.

A pad must be made for the inside of the tea cosy before it is quite finished This pad should be a little smaller than the decorated cover Pin the pattern used for cutting out the tea cosy on to a double piece of calico and cut it out, allowing ½ in of turning all round. Repeat this process, as four pieces are needed for making the pad. When making up the lining, ½ in. turnings are taken up everywhere, thus making the pad a little smaller than the cover When the four lining pieces have been cut out, pin them together in pairs, and tack and stitch each pair together, ½ in in along the curved sides This will give two pieces of cosy-shaped lining which must be fitted over each other with the padding enclosed. Two pieces of cotton wool, ½ in. less all round than the pattern, are cut out On one lining shape fold back the seams, and to each flap thus gained tack one piece of cotton wool

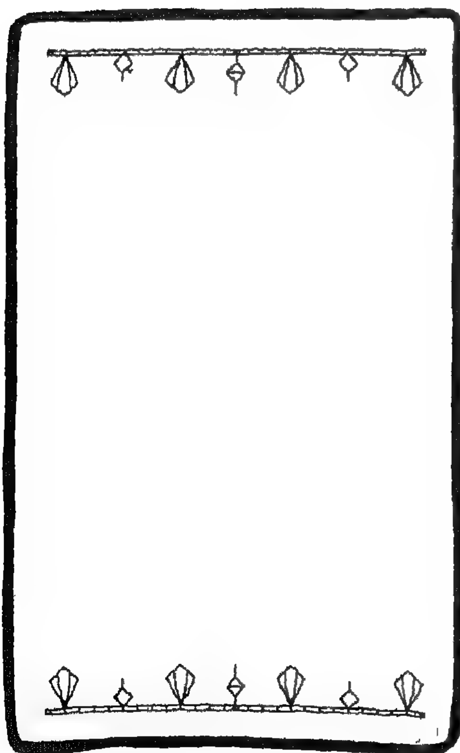


Patterns for the Tea Cosy

so that they fall on each side of the lining shape When these are firmly tacked, turn up ½ in. at the bottom over the cotton wool and tack it into place The seams on the second lining shape are now pressed open, the lining shape is turned on to the right side and fitted over the lining shape to which the cotton wool padding has been fixed, in such a way that all the seams lie on each other and all the raw edges are inside The bottom edge is then turned in to match the padded piece, and the two are slip stitched together

Time 6 lessons.

II. A TRAY CLOTH DECORATED WITH DOUBLE RUNNING



A TRAY CLOTH DECORATED WITH DOUBLE RUNNING (FIG 1)

THE only points to which special attention was given in the last lesson were whether the design was suited to the purpose for which it was to be used, and whether it could be executed in double running In this lesson we must consider the right placement of the pattern with regard to the width of the tray cloth, in order that the whole may produce a pleasing design To use this pattern along all four sides of the tray cloth necessitates the construction of corners, and this task is left till the next lesson. The tray cloth is bound all round, and decorated across each end. It is necessary to consider where the pattern shall begin and how much of it will be needed, and whether it will require any alteration to make it fit the chosen width

Fig 1 shows the tray cloth and Fig. 2 the details of the pattern The pattern is placed on the cloth so that the band at its base is ¾ in in from the inside of the binding along the end of the tray cloth, and ¾ in. in from the inside of the binding on the two long sides. Placing the pattern at this distance from the binding makes it stand out better than if it were nearer the coloured edge The position of the pattern having been settled, the length of the pattern needed is 11½ in (the narrow width of the cloth) less 1½ in, that is 10 in. This length of pattern should then be worked out on squared paper. As the big *motif* in the pattern would add strength to the design, it was taken as the most suitable with which to start the band of decoration On working out the

pattern it is seen that the original unit used on the tea cosy does not work out evenly for a length of 10 in Two solutions are available. (1) altering the length of the original unit as in Fig. 3, where the space between each unit has been slightly lengthened, (2) making an alteration either in the middle or at the two end parts of the required length, as shown in Fig 2, which is the pattern on the tray cloth It will be seen that the alteration, in this case, was made in the middle where the division was smaller than at the ends It was not so much smaller, however, that a crowded effect was produced when the small central diamond was slightly enlarged to add a little more interest to the pattern. The extreme ends of the design have an extra crossing stitch to give a definite finish.

There are no additions to the tool pochette.

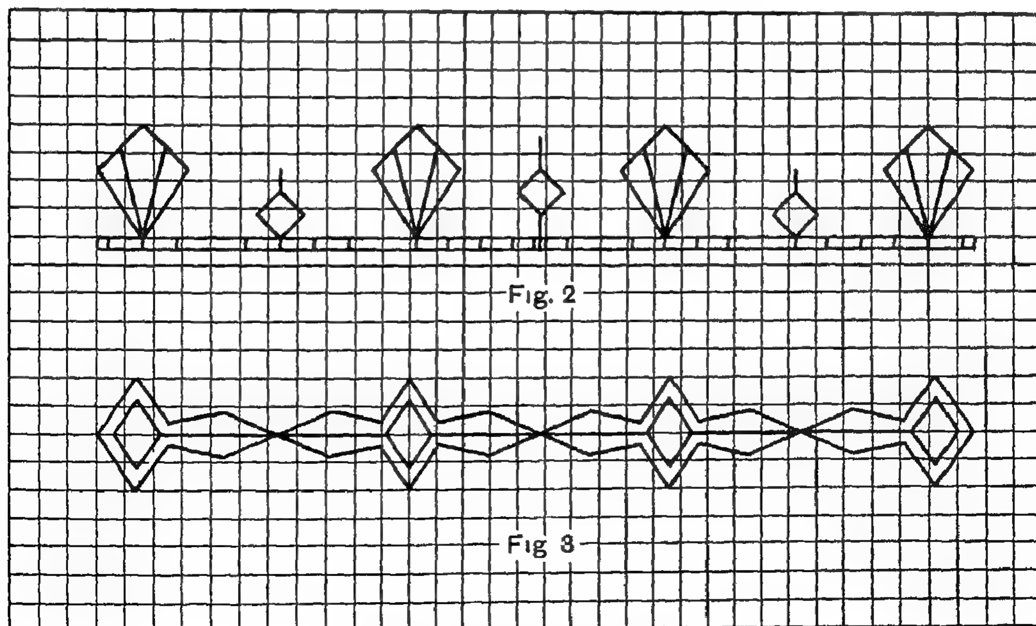
The classroom tools and materials needed for this lesson will be the same as those in the previous lesson with the exception of the materials required for making the pad for the tea cosy.

The tray cloth is made out of a piece of linen measuring 17½ in by 11½ in The four sides of the tray cloth are bound with flame-coloured linen which matches the thread used for the double running. The binding should be done before the decorative stitchery, as fraying edges are a handicap when working The linen for binding is cut on the bias 1 in wide. The binding is tacked round the tray cloth nearly ½ in from the edge; round the corners it should be stretched slightly to produce a neat, flat finish. After stitching, the binding is turned over and slip stitched in the same way as on the tea cosy.

The pattern on squared paper is used as a working drawing only, and is applied with the needle directly to the material, starting with the narrow band at the base. It is a good plan to work from both sides toward the middle, where any slight error that occurs in working may be corrected

When the decoration is finished the tray cloth needs pressing in the usual way

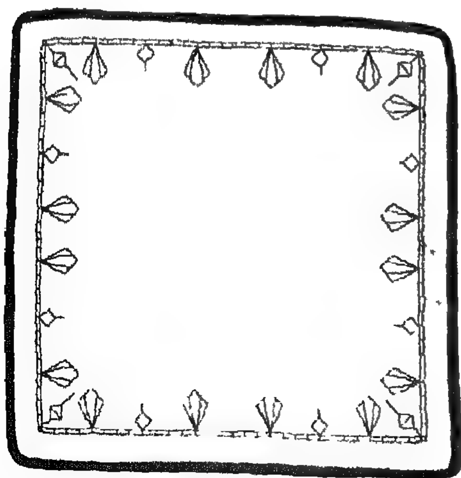
Time 4 lessons



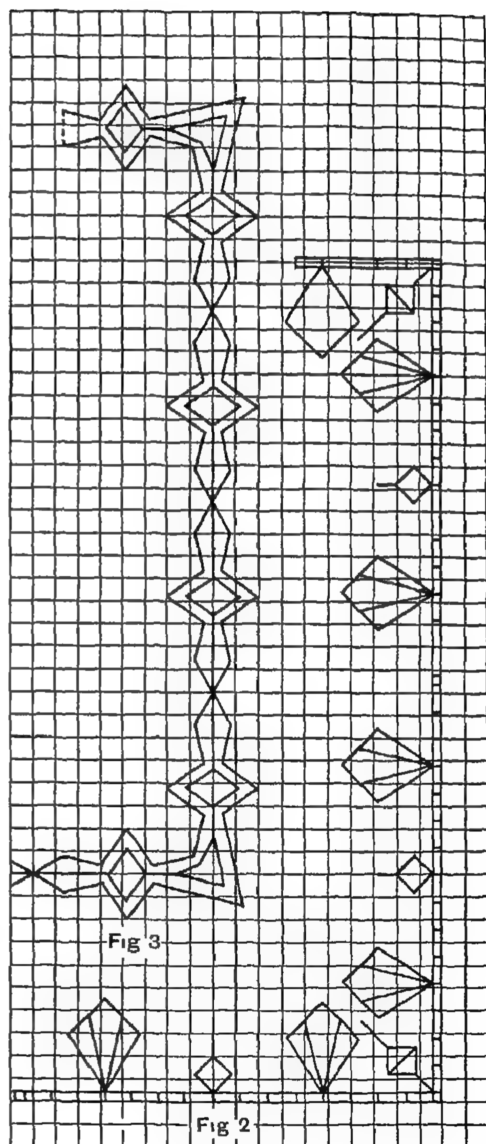
PATTERNS FOR A TRAY CLOTH

III. A TEA SERVIETTE DECORATED WITH DOUBLE RUNNING

THE chief consideration in this lesson is making a corner to match the pattern, although right placement of the pattern must be kept in mind. Would the pattern look better nearer or farther from the coloured binding? The photograph of the serviette (Fig 1) shows the pattern placed a little nearer the binding than it was on the tray cloth This was done so that the decoration might not look meagre and disjointed, as it would if a greater space were left between it and the border with a lesser space in the middle. Also, in this instance, the outline shape of the article is repeated in order to give a greater feeling of rhythm This would not be so well conveyed by a wide intervening space which would cause the eye to lose the sense of repetition. Moreover, when the square of decoration approaches the middle, the illusion of convergence appears The mind will, in fact, imagine lines joining the corners of the decoration with the corners of the



A TEA SERVIETTE DECORATED WITH DOUBLE RUNNING (FIG 1)



DESIGNS FOR THE SERVIETTE

binding. Another important principle, "Fitness for Purpose," would also be overlooked by placing the decoration farther in· a plain centre, not an embroidered one, is needed for use. When this test of "Fitness for Purpose" is applied, many an apparently pleasing design has to be rejected

Fig. 2 shows the design on the serviette in the photograph The corner was made by the elongation of a small *motif* The space in the middle of the sides was larger than the usual space between the *motifs*, so it was divided into two spaces of the usual length at each end of the middle space, and a smaller one was left in the middle As this central space was a good deal smaller than the usual size, the small *motif* between the two large ones was omitted The distance between each *motif* could have been decreased, but this would make the design appear crowded

Fig. 3 shows a second pattern adapted to fit the serviette As in the case of the design used on the tray cloth, the connecting lines have been lengthened till the design fits exactly, and a corner has been constructed in keeping with the remainder

There are no additions to the tool pochette.

The same classroom tools and materials will be needed as for the last lesson

The serviette is made from a piece of linen 12 in. square Like the tray cloth, before being decorated it is bound all round with a piece of coloured linen cut on the cross. The decoration is ½ in from the inside edge of the binding, hence a pattern must be made for a square of 11 in

The pattern is planned out on squared paper, but when it is being executed with the needle it is possible to make slight errors in calculations. These are most easily put right if the design is worked from the corners towards the centre.

Time. 6 lessons

IV. A NIGHTDRESS CASE DECORATED WITH A DESIGN EXECUTED IN SOLID CHAIN STITCH AND BACK STITCH

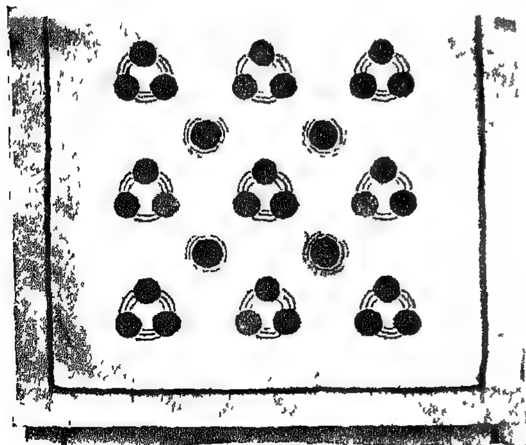
THE third lesson for children eight years old (see Vol. II, page 598) was devoted to making a handkerchief sachet, decorated with a design executed in solid chain stitch In this lesson, it is proposed to make a nightdress case to accompany the handkerchief sachet The construction of the two articles is identical, but the difference in size calls for a reconsideration of the decoration A variation of the first design will be needed, but the designs must have something in common if the two articles are to give a pleasing effect when placed together. Fig 3 shows the design used on the nightdress case illustrated in the photograph The original group of three circles has been used. The circles, however, are larger and are linked together by arcs of concentric circles, but the arcs do not actually touch the circles.

In preparation for the construction of the design for the nightdress case, it will be advisable to refer to the simpler design on the handkerchief sachet. If the centres of the circles forming each group of three be joined by straight lines, the children will readily recognise that an equilateral triangle is formed The explanation of the construction of the larger design could be demonstrated on the blackboard, Fig 3 Here

again, three circles, having their centres at the corners of an equilateral triangle, form the basis of the large *motif* This time, the circles are linked by broken circles, all lying within one another in the manner called concentric Some children will probably volunteer the statement that these circles have a common centre, and they may be able to suggest a method of discovering it. This may be done (1) by bisecting two sides, and drawing lines at right angles to the sides; (2) by bisecting two angles The point of intersection of either pair of lines is the centre of the concentric circles

Once this *motif* is drawn, the arrangement of the design is a matter of spacing The centres of the large construction triangles lie on a straight line, at even distances apart The smaller *motifs* are easily drawn with compasses, and their centres lie on a straight line at even distances midway between the large *motifs*. The design is completed by repetition

Some children will wish to see what they can do for themselves as a result of what they have learned from the demonstration This creative desire should be encouraged, for the use of a child's own design is much to be preferred to the copying of the one demonstrated



A Nightdress Case decorated with a Design executed in Chain Stitch (Fig 1)

It may be that, in decorating the handkerchief sachet, some pupils chose to use the alternative designs suggested in that lesson (see Figs 4 and 5, Vol II, page 601) Where these designs have been used, they will be needed again for the decoration of the nightdress case It was suggested that if either of these designs was used on the sachet, a single *motif*, placed centrally, would be sufficient, since both *motifs* are much larger than the one used to form a repetitive pattern on the sachet illustrated. For use on the nightdress case they will need spacing evenly over the area to be decorated A small *motif* should be interspersed, as shown in Fig 4, which is one of the *motifs* from the earlier lesson with an added smaller *motif* in keeping with the large one

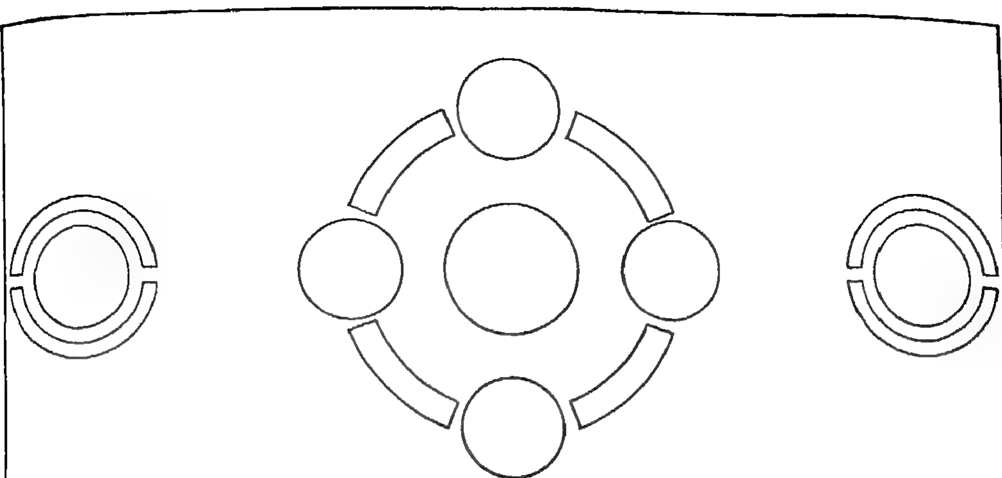
There are no additions to the tool pochette.

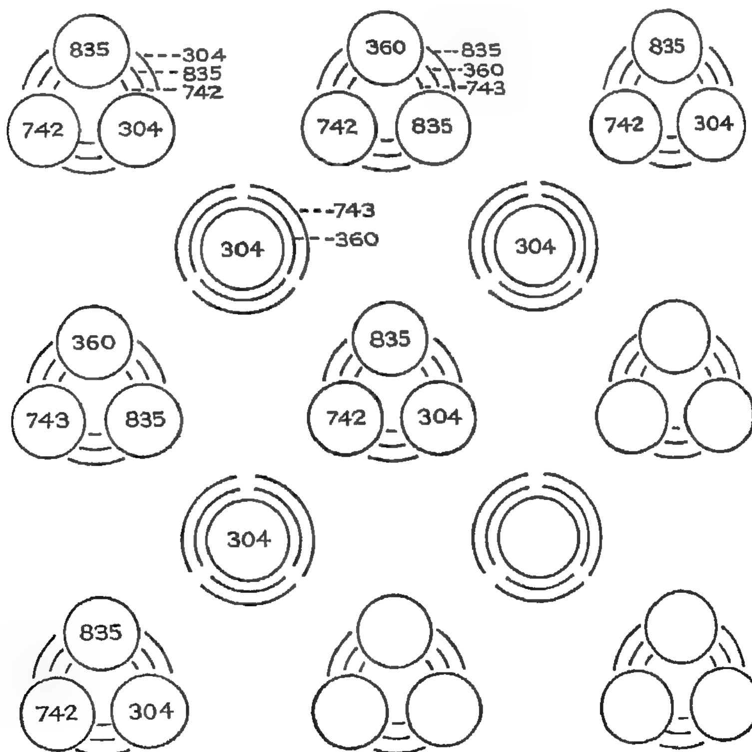
The following classroom tools and materials will be needed·

- Coloured linen, or some similar material
- D M C. *coton à broder*, No 12 or 16
- White sewing cotton, No 40
- Tacking cotton
- D M C sewing cotton, to match the linen chosen.
- Needles Nos 5 and 6.
- Large cutting-out scissors
- Squared paper and used carbon paper.
- Compasses. HB and 3H pencils. Rulers.

The nightdress case, shown in the photograph, is made from a piece of buttercup linen measuring 45 in. by 20 in, the embroidery is done in the following colours D M.C. *coton à broder*, red No. 304, dark orange No 835, orange No. 360, yellow Nos 742 and 743

The construction of the nightdress case is exactly the same as that of the handkerchief sachet. A hem 1¼ in wide when finished is turned up all round, using ¼ in. turnings. If one side of the material is selvedge, this should be snipped every few inches to prevent the side dragging, and





ARRANGEMENT OF COLOURS ON THE NIGHTDRESS CASE (FIG 2)
ARRANGEMENT OF LARGE AND SMALL *MOTIFS* (FIG 4)

should be turned in like the other three sides and tacked into place. It is then ready for the decorative stitchery

Three rows of chain stitch are used on the hem. On the sachet one row only was used, for this was merely a means of fixing the hem, and it was done in a colour to match the material On the nightdress case the fixing of the hem is to have a decorative value, and it is stitched with two colours, orange in the middle and pale yellow on either side, the rows lying close together The first row of chain stitch (pale yellow) is worked on the edge of the hem, the tacking must be removed carefully before the other two rows are added. A single row of chain stitch on this hem, even if worked in a contrasting colour, would look weak and inadequate on so large an article

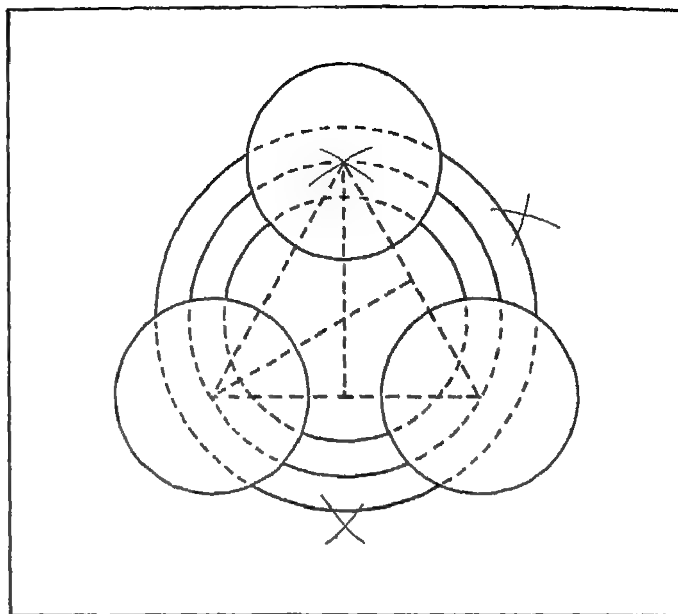


DIAGRAM SHOWING THE CONSTRUCTION OF THE *Motifs* (FIG 3)

The design is traced on to the part of the material which will form the flap when the nightdress case is made up. The tracing is done as soon as the three rows of chain stitch are finished The arrangement of the colours is marked on the design for the nightdress case, Fig. 2 The same colours are required for all the small *motifs*, but alternate colours are used on the larger *motifs*. All the circles in the design are worked in solid chain stitch, back stitch is used for the arcs linking the circles.

The nightdress case is made up in exactly the same way as the sachet The unembroidered end is folded over 13¾ in. with the wrong side outwards, and the sides are top-sewn together, working from the opening of the pocket towards the fold When this is done, the work is then turned on to the right side and carefully pressed

Time 8 lessons—if some of the decoration is done at home.

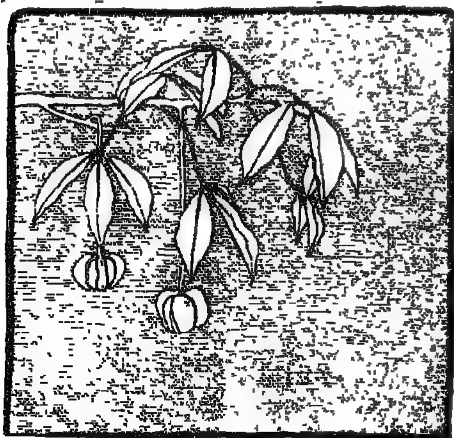
V. A FURTHER USE OF HUCKABACK

IN the work for children both in their eighth and ninth years, huckaback was used as a basis on which to construct decorative stitches For pupils in their eighth year, the raised threads were picked up so that the patterns formed were similar in character, this similarity was due to the structure of the material itself The decorated article was made up by the use of ordinary sewing stitches In the work of

pupils in their ninth year, the raised threads picked up in the material were lying in the opposite direction from those picked up in the earlier lesson The resulting patterns were still somewhat similar in character, but more variation was shown; the patterns were also more difficult to produce, and hemstitching was used for making up the article

Another treatment is suggested in this lesson A simple flower spray is outlined in stem stitch, and all the background is filled with running stitches by picking up the raised threads. The material should be placed so that the threads, which will be used when making running stitches on the background, are in such a position that the lines of running stitches will be parallel with the top and bottom edges of the cushion Fig 1 shows a cushion cover decorated in this way A natural spray of the rubber tree, with both berries and leaves, has been outlined, and then thrown into relief by running stitches on the background The cushion is finished with a linen binding of the same colour as the *coton à broder* in which the stitchery is executed

There are no additions to the tool pochette in this lesson.



A Huckaback Cushion (Fig. 1)

The following classroom tools and materials will be needed:

White huckaback.

D M C. *coton à broder* in strong colours, No 12 or 16

Coloured linen to match the *coton à broder*

D.M C sewing cotton, No. 40, to match the coloured linen

Small, blunt rug needles and sewing needles No. 6.

Tacking cotton and white sewing cotton, No 40, for sewing on fasteners.

White dress fasteners and large cutting-out scissors.

HB and 3H pencils.

Used carbon paper

Sheets of drawing paper (books are not large enough), and tracing paper.

The first essential for this lesson is a drawing of a suitable plant and the characteristics of this drawing must be boldness and simplicity—above all, simplicity.

A plant of bold habit must be chosen, such as the iris, large lily, tulip, daffodil or peony, the last named will need very careful drawing in order to avoid unnecessary lines while preserving the "feeling" of the flower. Sprays of leaves, such as beech, chestnut, ivy or sycamore may be used instead of the flowers The chosen plant must then be carefully arranged. Complete sprays of leaves, and certain flowers will generally have too prolific growth to be satisfactorily transferred, *au naturel*, to paper, and afterwards to material for execution with the needle. Some leaves, flowers or berries may need to be removed, so as to simplify the drawing and show the remaining growth clearly, but the natural habit of the plant must be preserved, as this exercise is to be a realistic treatment of it

In order to gain a real idea of what the finished cushion will be like, the drawing must be made on a sheet of paper larger than the cushion, which is 18 in. square. A clear, strong outline is absolutely essential,

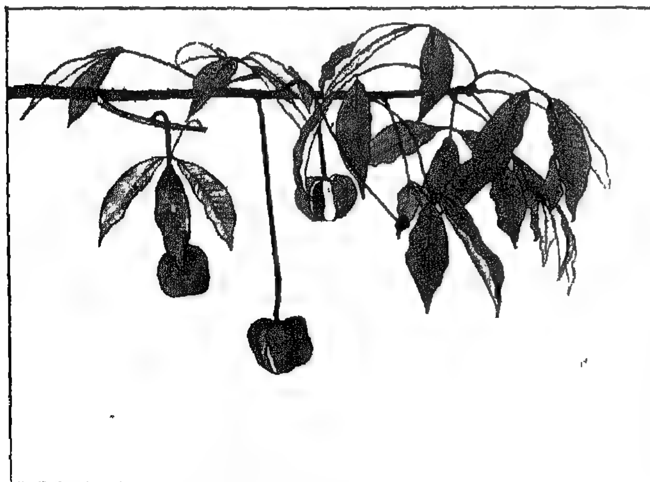
and only such lines on the plant itself as are necessary to give a characteristic rendering should be represented. Fig 2 shows the original drawing from which the spray on the cushion was taken This drawing shows the curious and interesting veining natural to the leaves, but this veining has not been emphasised in the drawing for the cushion (Fig. 3) as it would provide too much detail on the smaller area of the cushion, and detract from the boldness of effect

When the drawing is finished, its position on the cushion must be determined A simple method of deciding this point and one that interests children, is to cut from a sheet of brown paper a square frame the size of the cushion Place this frame or mask over the drawing and move it about in order to see the sketch in different positions. The position finally chosen should be the one in which the drawing breaks up the background in the most pleasing manner, and at the same time shows the beauty of the plant to the greatest advantage. Holding the mask in position, mark the drawing to show where the outline falls (The inside line of the mask will be the edge of the cushion) Remove the mask and rule in the outline by the marks made. A record will then be ready to show the position the design will occupy on the cushion

The plant and its enclosing lines are next traced on to tracing paper in readiness for transference to the material. The enclosing lines will not be placed on the cushion; they are merely guide lines by which to keep the design in position when tracing.

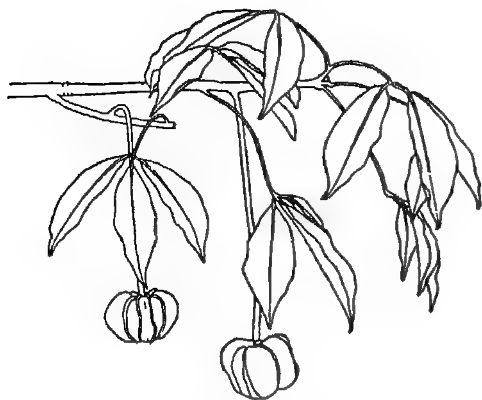
The cushion shown in the photograph is made of white huckaback, the design is executed in red *coton à broder*, and the binding is red linen to match the *coton à broder*. Two pieces of huckaback, each measuring 18 in. by 20½ in, are used for the cushion which is square when finished. The extra 2½ in. are allowed on each piece for making the opening

The tracing is placed over one piece of huckaback, leaving the 2½ in. extra at the bottom, this 2½ in. of material is not decorated like the remainder of the background Used carbon paper is slipped under the tracing and the design traced on it with a 3H pencil. The design is first outlined in stem stitch If too much detail has been allowed to creep into the drawing it will show up immediately by making the stem stitch outline difficult to work as well as giving the whole an overcrowded appearance.



A Wash Drawing of a Spray of the Rubber Tree (Fig 2)

When the design has been outlined, all the background (except the 2½ in. already mentioned) is filled in with running stitches, backwards and forwards across the material, giving the effect of rows of running Care must be taken that these rows are not drawn tightly. Straight rows of running are used, as a patterned background would detract from the decoration of such a plant form When the working of the background reaches the drawing the thread can be carried under narrow stems, but with the large leaves and flowers it is advisable to



THE DRAWING PREPARED FOR TRANSFERENCE TO THE MATERIAL (FIG 3)

take the needle into the next row and turn back, filling the space or spaces on the other side of the leaf or flower later. This method avoids long carrying threads on the wrong side. The back of the cushion may be left plain, or filled with running, or made identical with the front, according to taste. The starting and finishing of threads is the same as in the lessons where huckaback was used by pupils in their eighth and ninth years

The sides of the opening are tacked together as soon as the decoration is finished. The 2½ ins of material left plain is folded back so that the decorative running stitches appear to be continuous over an 18 in. square The flap of 2½ in. is folded in half, so as to bring the raw edge in line with the edge of the cushion, this is tacked firmly into place The only stitching needed for the moment is the tacking, since it is undesirable to show hemming mingled with the running stitches on the background; and slip stitching would only pull the raised threads The opening on the back piece is made by turning back the 2½ in. flap; on this a turning ¼ in. wide is made. This is then brought to the edge of the square and slip stitched firmly along the edge.

The side forming the opening on the decorated square is bound with a piece of coloured linen, 1 in. wide, cut on the bias, thus making the opening secure and enclosing the raw edge and the fold on the edge of the cushion The ends of the binding need not be turned in, as they will be covered later. The two sides of the cushion are pinned and tacked together The three remaining sides are bound with linen in the same way as the one already described. The ends of this binding are turned in and neatly top-sewn. Six dress fasteners are sewn on the folds of the opening at equal distances apart, and the cover is carefully pressed.

Time 6 lessons—if most of the decoration is done at home.

VI. SOLID BUTTONHOLE STITCH

THE evolution of buttonhole stitch from blanket stitch has been dealt with in several lessons, but it has always been considered as an outline stitch In the first lesson for children in their eighth year (see Vol. II., page 594) blanket stitch was used over a raw edge for the leaves of the needle book belonging to the tool pochette, in another lesson the same stitch was used over an edge which was turned in, and flowers were made in blanket stitch In a third lesson blanket stitches were placed close together to form scalloping or buttonholing In work for children in their ninth year, graduated blanket stitch was employed on a face cloth The present lesson deals with the use of buttonhole stitch as a solid filling stitch.

Fig. 1 shows a design executed in solid buttonhole stitch. The stitches have not

been worked very close together, so that the method of execution shows clearly When the stitches are worked a little apart from one another, a dainty, lacy effect is produced This looks very pretty on a light-weight material, especially if the embroidery cotton selected is of a different colour from that of the background material. On the other hand, if the stitches are worked close together on a heavy material, the result is very handsome.

This form of decoration wears and launders well, and can be used for the decoration of table linen, cushions, handkerchiefs and children's clothes—to mention a few articles for which it is suitable Tray cloths or tea serviettes look attractive when worked with cotton of a contrasting colour on lawn or some other light-weight material. The stitches must be placed so that the material shows between them, not close together.

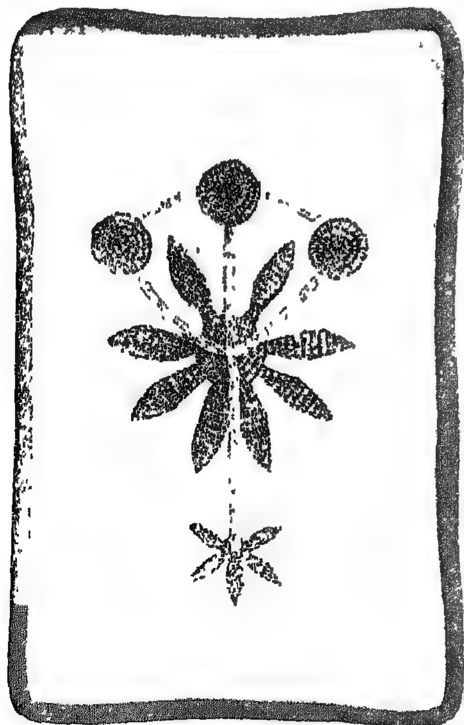
Cushion covers or table mats are best worked on linen or on some other heavy-weight material, with the stitches placed close together.

There are no additions to the tool pochette

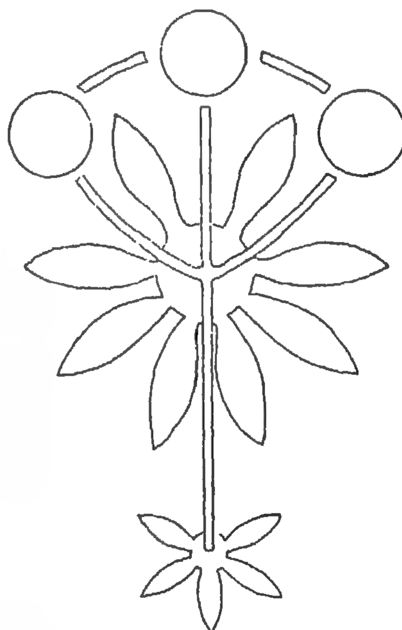
The following classroom tools and materials will be needed for this lesson

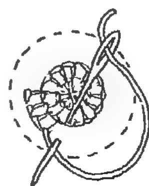
Linen, lawn or similar material

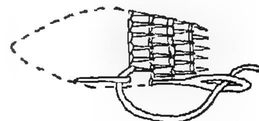
D M.C. *coton à broder*, No 16, in suitable colours.



DESIGN IN SOLID BUTTONHOLE STITCH (FIG 1)







PLAN OF THE DESIGN (FIG 2)
HOW TO WORK THE BERRIES (FIG 3)
HOW TO WORK THE LEAVES (FIG 4)

Sewing cotton to match the material.
Large cutting-out scissors and No 6 sewing needles
HB and 3H pencils, rulers and compasses.
Drawing paper and used carbon paper.
Tracing paper.

Designs should be worked out on drawing paper and tracings made from them. The tracing for making the design on the material, can then be used with carbon paper and a 3H pencil. Fig 2 shows the design used in the photograph.

The berries in Fig. 1 are worked from the centre outwards, each row of buttonholing being worked into the heading of the preceding row, Fig. 3. The circle from which the leaves spring is worked in the same way as the berries, until the leaves are reached. The leaves themselves are worked with parallel rows of buttonholing, working towards the tip, as illustrated in Fig. 4. The stem consists of two rows of buttonholing, facing each other, so as to give a smooth outline; that is, the heading of the stitches is on the outside of the stem Threads are started with small running stitches, which will be covered by the heading of the buttonholing Threads are finished off on the back as inconspicuously as possible

Time according to the size of the piece of work attempted

VII. THE DECORATION OF COLLARS AND POCKETS



THE END OF A MANDARIN SLEEVE STRIP (FIG 1)

THE decoration of belts was dealt with in the previous year's work, in this lesson one type of decoration suitable for pockets and collars will be considered, namely, the use of simple *motifs* Continuous patterns, following the shape of the collar, are very attractive; but the demands and limitations of the shapes of collars present many difficulties to the beginner Continuous patterns are therefore better left until time and experience have increased the skill of the young designer. The creation of a design, the choice of colours with regard to the remainder of the dress, and the right placement of the design on the collar or pocket, will provide much food for thought; and the satisfactory solution of these problems will suffice for the present

The collar and pockets on a dress may be of the same material and colour as the dress itself, or they may be of a different material or colour Again, they may be of a colour

that tones with or forms a pleasing contrast to the dress. For instance, on a heavy winter dress the collar might be of a different colour and material, but as the collar is made easily detachable for washing, and the pocket is not detachable, it would be better to decorate the collar only, and make the undecorated pocket of the same material as the dress For light-weight frocks, made of linen, which, above all materials, is the best for embroidering, the collar, pockets and cuffs look very attractive when made in a similar linen of a different colour from the frock, and embroidered in coloured threads, one of which has the same colour as the dress itself. Alternatively, a string of favourite beads that looks well with a particular frock might have its colours repeated in the embroidery.

Satin stitch is used in this lesson. To judge from the assurance with which beginners start embroidery by using this stitch, one might suppose that it is easy to execute. The reverse, however, is the case To work so that the stitches lie in the right direction and give a straight, unbroken outline, is no easy matter The stitch needs practice and patience, in addition to a well-established rhythm, if the results are to be creditable

Satin stitch is one that the Chinese execute to perfection Fig 1 shows the end of a Mandarin sleeve strip. The slope of the stitches follows the natural growth of the plant and gives life to the embroidery. The midrib of the leaves is denoted by a thin line of the background material, which is left bare, the same method is used where two petals of the flower overlap This way of accentuating the growth of a plant is called "voiding," and is typical of Chinese work; but it is difficult to execute, as it depends upon a true outline

There are no additions to the tool pochette.

The following classroom tools and materials are needed for this lesson

Material for pockets and collars

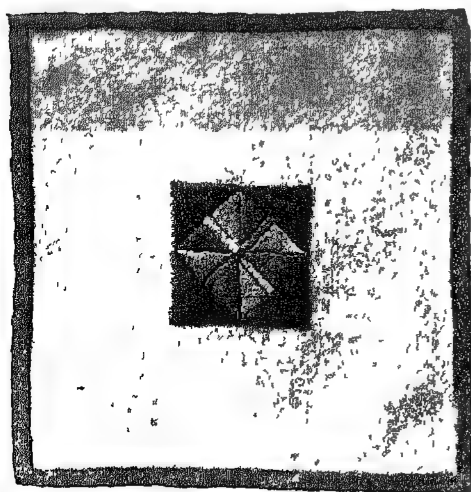
D.M.C. *coton à broder* No 12 in suitable colours

No 5 sewing needles, and large cutting-out scissors

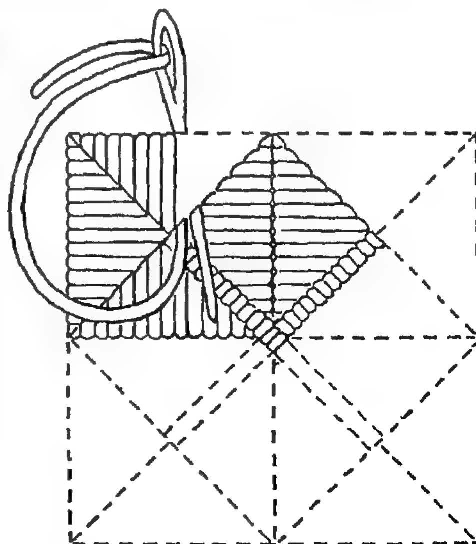
Squared paper and used carbon paper.

HB and 3H pencils

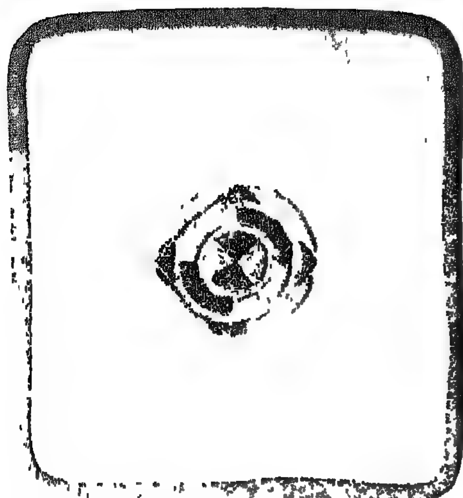
Designs suitable for embroidering on dresses must be worked out on squared paper



A Simple Geometric *Motif* Executed in Satin Stitch (Fig 2)



The Working of Satin Stitch (Fig 3)



SIMPLE *MOTIF* WITH STITCHES WORKED TOWARDS THE CENTRE (FIG 4)

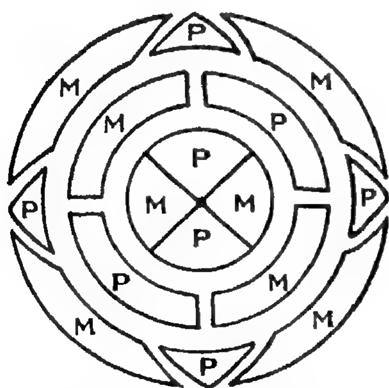
The simpler the designs to start with the better, for then fewer problems concerning the direction of the stitches will present themselves Fig. 2 shows a simple geometric pattern gained by sub-dividing a square The design has been filled in completely with satin stitch The stitches follow three different directions in order to give an effect of marquetry to the design; but the stitch, except in the cross in the centre, is always at right angles to a side. The directions of the stitches in this design are illustrated in Fig 3.

Fig 4 shows another geometric pattern in which the stitch is worked towards the centre all the time This design is produced in two colours only, purple and mauve. The inner circle in this design must be worked with stitches of uneven lengths, the long stitches overlapping the shorter ones towards the centre Stitches of even length in this part of the design would result in bulkiness and a hole in the middle. The design is shown in Fig. 5, and another suggestion for the same use in Fig 6.

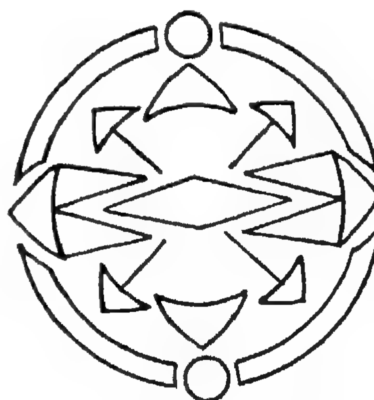
The design is traced with used carbon paper on to the pocket or collar. Care must be taken that the design is placed quite evenly and correctly on the material

When working the satin stitch (Fig. 3), threads are started by taking a few running stitches in the material, these are covered in the course of the embroidery Threads are finished off by a few running stitches into the back of the embroidery Start embroidering the centre of the design and work outwards The decoration will need careful pressing from the back before attaching the collar or cuff to the dress

Time: 3 lessons.



P—PURPLE M—MAUVE
THE DESIGN FOR THE *MOTIF* WORKED IN FIG 4 (FIG 5)

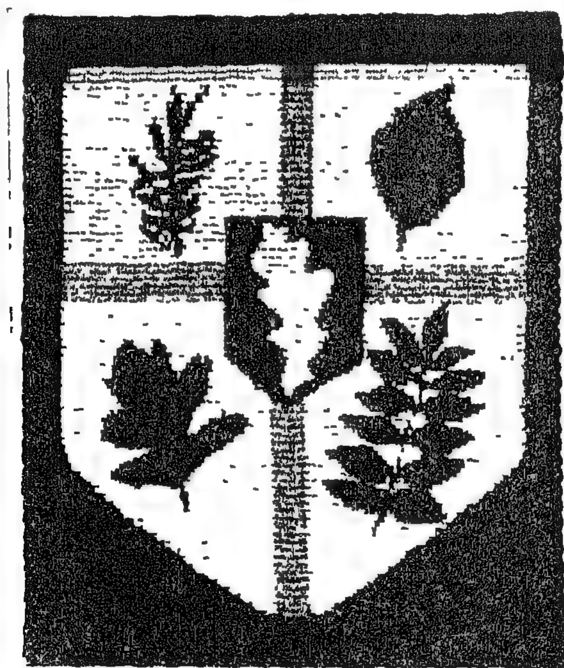


ANOTHER SUGGESTION FOR A DESIGN (FIG 6)

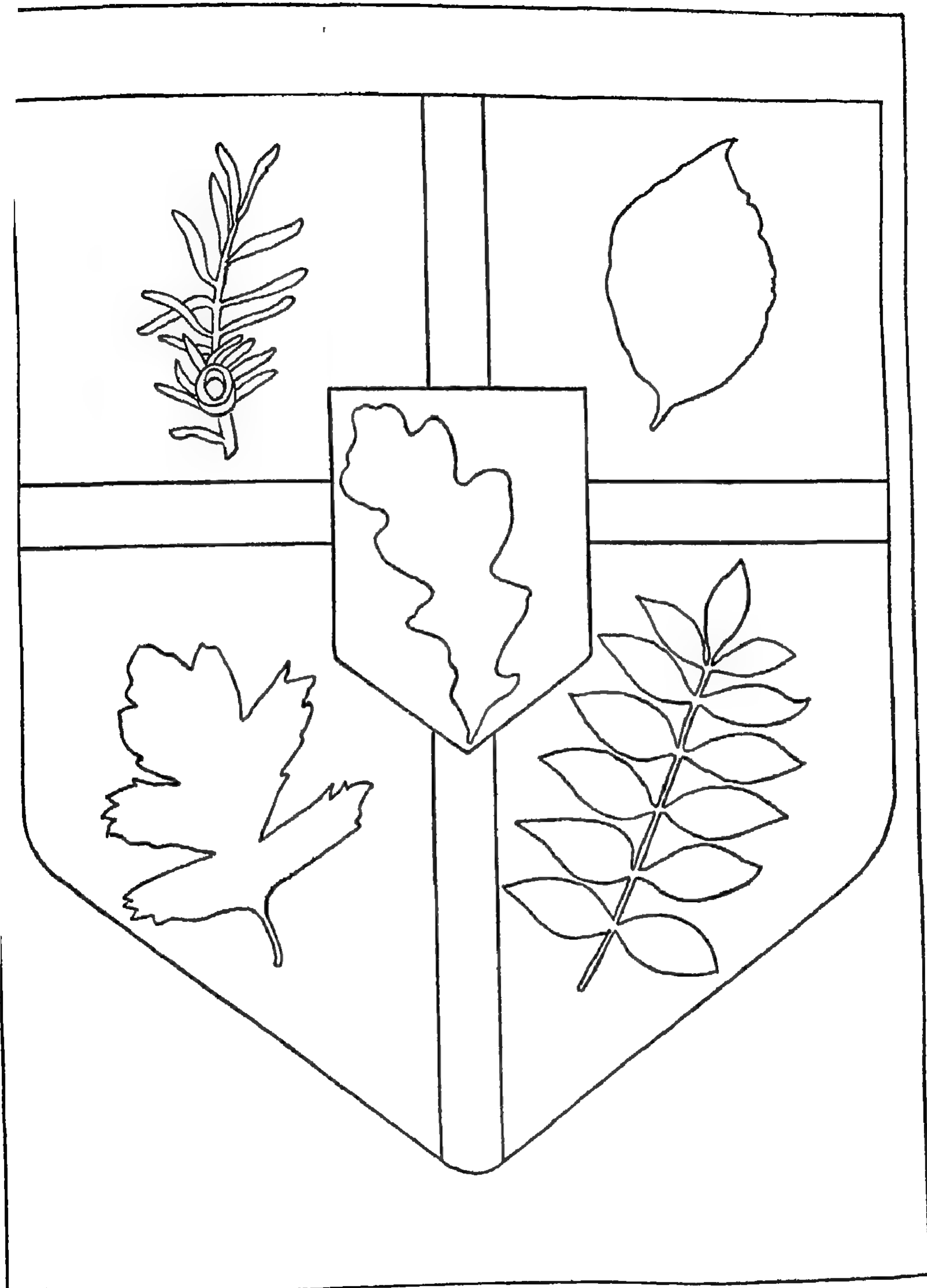
VIII. A SCHOOL SHIELD, HOUSE AND CAPTAIN'S BADGES

DURING the latter part of this year's course the children are approaching the period which is marked by a considerable change in their social attitude Whereas, so far, they have enjoyed membership of a group which has afforded an audience and scope for the satisfaction of competitive activity, interest will begin to shift from this self-centred individualistic attitude towards real teamwork. At a later stage, this changing attitude is frequently provided for by House Systems which embrace the entire school It will, therefore, be desirable to provide some means to foster this altruistic attitude. With this idea in view, the articles chosen to be made in this lesson consist of community work, namely, a school shield and badges for members of the various teams, as well as one for the captain of all the teams. (See Figs 1 and 2.)

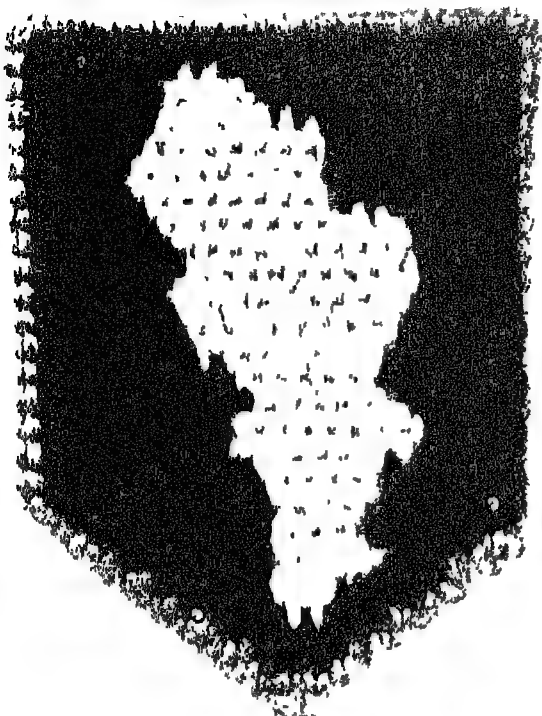
The symbols chosen for the different teams are simple, namely, the leaves of five of the best known British trees—yew, beech, hawthorn, ash and oak A school shield, like the coat of arms of a borough, grows out of definite associations, and there is a reason for the inclusion of every symbol in a coat of arms. The spirit of this lesson would be lost if children worked on meaningless material, hence the choice of the leaves



A SCHOOL SHIELD (FIG 1)



Outline Drawing of the Shield with its Emblems (Fig 3)



A House Badge (Fig 2)

of the trees mentioned above Each tree is linked by many associations with the customs and history of the English people

Some days before the needlework is begun the children should be instructed to search in their school and library books for all the information they can gather about the trees they are going to represent on their shield. Many poems have references to the oak, ash, yew and hawthorn trees.

There are no additions to the tool pochette.

The following classroom tools and materials will be needed

Single mesh canvas. Tapestry wools

Blunt rug needles

Crash or some similar material, for backing the house badges.

Sewing cotton No 6 sewing needles.

Large cutting-out scissors and safety pins.

Fresh carbon paper and tracing paper

Squared and drawing paper.

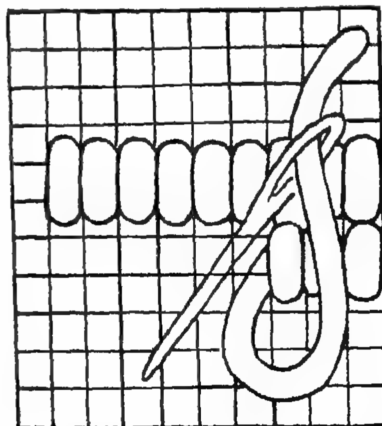
HB and 3H pencils. Rulers and set squares

The school shield must be made large enough to stand out clearly when seen from a distance It will hang on the wall of a large room, so it is essential that it should be of a suitable size for this purpose; it is a wall decoration as well as an object with a symbolic value

Not only should the emblems on the shield have a definite meaning, but the colours used should be symbolical also

The emblems on the shield should be drawn freehand and traced on to the shield in their proper places. It will be best to trace them one at a time, as the tracing is apt to wear off the canvas with handling.

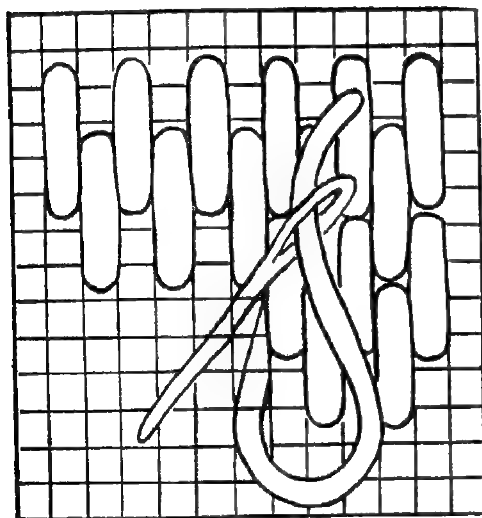
The shield itself should be worked out on squared paper. By the use of set squares the sloping sides of the inner shield are drawn parallel with the sloping sides of the large shield Fig 3 shows a drawing of the shield from



Upright Gobelin Stitch (Fig 4)

which a tracing was made; this was then transferred to the canvas with fresh carbon paper

The stitch used for executing the shield is upright Gobelin stitch, Fig 4. It is a simple canvas stitch which gives a very satisfactory result in work of this kind. The starting and finishing of threads are done in the same way as in the previous lessons on canvas work. The emblem in one quarter should be worked first, then the background across to the next emblem It will be noticed that Gobelin stitch covers two threads of the canvas, so care must be taken not to work carelessly anywhere or the rows of stitches may get out of alignment.



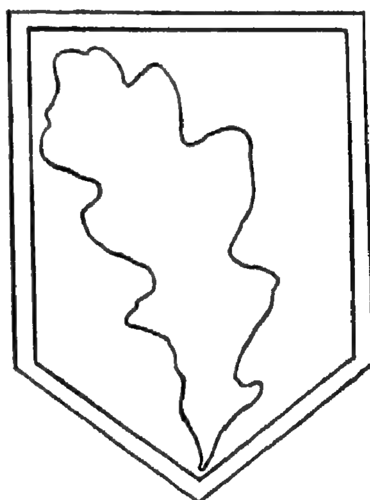
VARIATION OF FLORENTINE STITCH (FIG 5)

When the work on the shield is finished the background is filled in with Florentine stitch (Fig 5) to within ¾ in of the edge of the canvas. When the stitchery is complete, the shield must be stretched and suitably framed so that it will hang straight and remain clean.

The house device.—The school shield is suggested as a piece of community work, the house device is an individual piece of work that can be made at the same time as the shield, each pupil doing her share of the shield and returning to her own badge between whiles.

Fig. 6 shows the badge of the captain of the whole school It is the small shield placed centrally The house devices would, of course, be made from the other four emblems, but the method of execution would be the same as for the captain's badge

The emblem of each house is placed on a small shield like the captain's badge. It is then traced with fresh carbon paper on to a piece of canvas, and worked entirely in Florentine stitch. When the stitchery is finished the canvas left over is turned back and herringboned on to the wrong side. A piece of crash or some similar material is cut a little larger than the size of the badge This piece of material is turned in, tacked and slip stitched on to the badge to make it tidy, and a safety pin is sewn on for attaching the badge to the tunic or dress

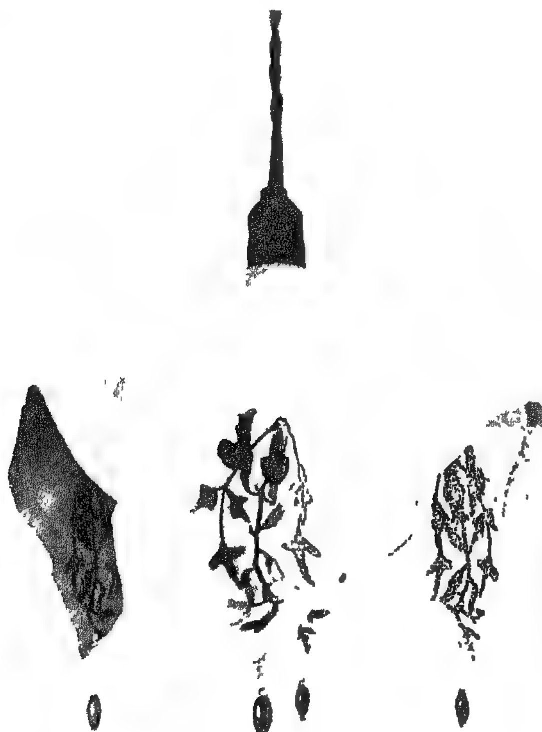


CAPTAIN'S BADGE (FIG 6)

Time: 4 lessons A little additional time may be needed to finish off the large shield; this could be given in odd minutes volunteered for the purpose.

IX. A LAMP SHADE EMBROIDERED IN SATIN STITCH

SATIN stitch is the chief stitch used in this lesson, as in Lesson VII, but here there is an increase of difficulty in the stitchery applied to floral subjects The slope of the stitches follows the contours of the plant as was explained with reference to the end of the Chinese Mandarin sleeve strip.

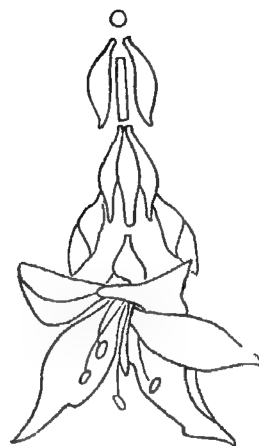


A LAMP SHADE EMBROIDERED IN SATIN STITCH
(FIG 1)

Fig. 1 shows a lamp shade for use over an opaque glass shade; the corners are decorated with an embroidered spray of a flowering tree. No attempt has been made to design a conventional pattern; the spray has been "arranged" for embroidery; that is, leaves or flowers that overlapped to any great extent have been omitted or altered and the drawing has been left as simple and straightforward as possible Fig 2 shows the details of the spray

Figs. 3 and 4 show two designs that could also be used for decorating corners of lamp shades In both instances they are conven-







Details of the Bauhinia Spray used on the Lamp Shade (Fig 2)
Design made from a Waratah Flower Head (Fig 3)
Design made from a Flower Head of a Tree of the Bauhinia Genus (Fig 4)



A WASH DRAWING OF THE WARATAH (FIG 5)

tionalised renderings of tree flowers Fig 3 is the waratah, the pride of New South Wales; Fig 5 shows a wash drawing of the same subject The flower head only has been used in Fig. 3, and it has been treated so as to make possible its execution in embroidery

Fig. 4 shows a design adapted from a tree of the Bauhinia genus of tropical trees Fig 6 shows a wash drawing of flower sprays of one of these trees. In the design, Fig 4, an open flower, two half-opened buds, closed buds and the foreshortened view of a bud at the top of the design have been selected.

When considering plants as subjects for designs, it is a good plan to choose those which have been little used in decorative work. If a plant frequently used in design is selected, it is very easy, unconsciously, to produce designs similar to those one has seen; whereas the use of newer material is likely to result in more original designs, and interesting discoveries will be made in connection with plants whose decorative qualities have been less explored

There are no additions to the tool pochette.

The following classroom tools and materials will be needed for this lesson

Fadeless coloured lawn or some similar material

D M C sewing cotton No. 50, to match the colour of the lawn

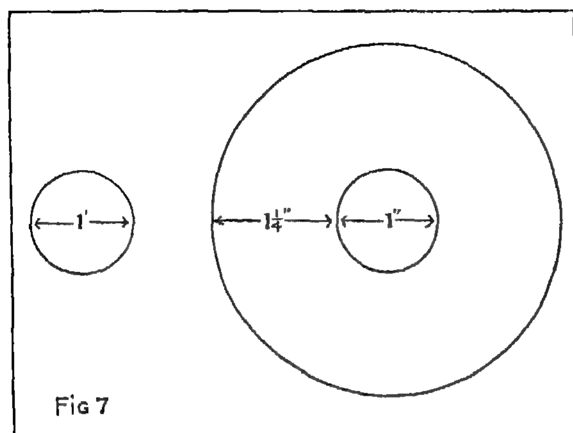
Pearsall's Filoselle or D M C *coton à broder*, or stranded cotton in suitable colours

Large cutting-out scissors.

Tacking cotton. Nos 5 and 6 sewing needles.



A WASH DRAWING OF FLOWER SPRAYS OF A TREE OF THE BAUHINIA GENUS (FIG 6)



MAKING THE HOLE IN THE CENTRE OF THE LAMP SHADE

Drawing paper Tracing paper Used carbon paper.
HB and 3H pencils
White dress hooks

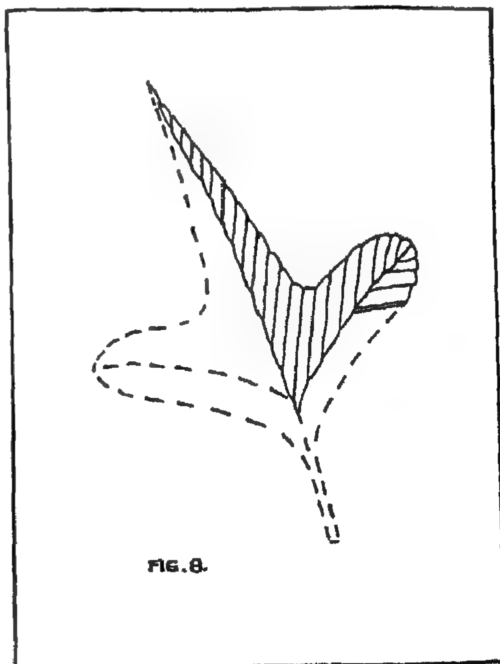
The lamp shade is made from a piece of lawn measuring 18 in square Two lamp shades can be cut out of half a yard of material 36 in wide If the material is more than 36 in. wide two squares can be cut equal to half the width of the material, from material 38 in. wide two shades can be cut out of a piece 19 in long. A hem, ½ in wide when finished, is turned up all round the material, a ¼ in. turning is allowed The corners are made with hems in the same way as on all the articles made out of rectangular pieces of material. The hem is slip stitched with cotton to match the material, and the fold at the end of the hem is top-sewn

A circular hole of 1 in diameter is cut in the middle of the square The hole is faced with a piece of material to fit, Fig 7 The facing is tacked on to the shade on the right side, and then stitched ¼ in from the edge of the hole. Small snips are made in the facing and the shade almost to the stitching, the facing is then turned on to the wrong side, turned in, tacked and slip stitched into place

A tracing is made of the design to be embroidered on the lamp shade This is transferred to the material with carbon paper and a 3H pencil

So far only cotton has been used for decorative stitches, *coton à broder* and stranded cotton. Pupils who have gained some proficiency with their needles might try using silk Soft silk, which catches easily, would lead only to disappointment, but a silk like Filoselle is suitable for making a first attempt Two or three strands should be used.

The lamp shade illustrated in Fig 1 is made of pale pink lawn and the decoration is in three shades of rose D M C stranded cotton Nos. 346, 3,328 and 3,329, greens Nos. 368 and 367, and brown No. 434 Satin stitch was used for all the flowers, leaves and anthers, and stem stitch for the stems and stamens. Fig. 8 shows the direction of the stitches on a leaf



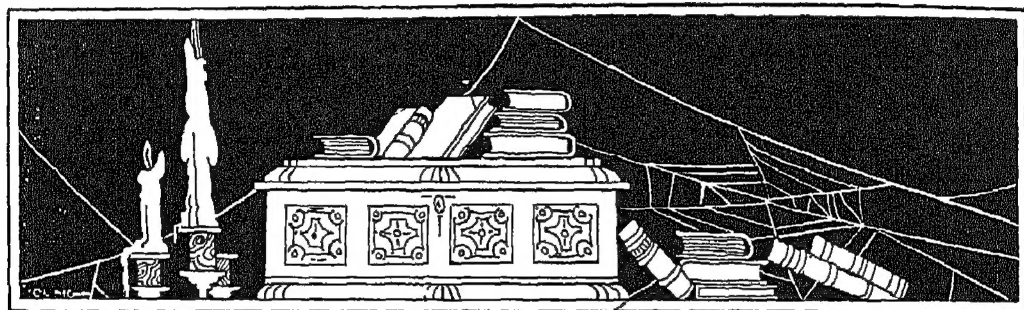
THE WORKING OF THE STITCHES ON A LEAF

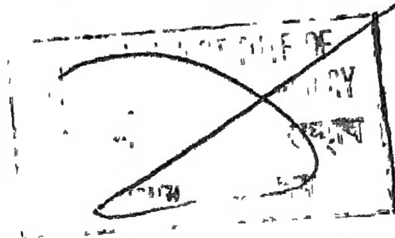
A small eyelet is placed at the top of the hem on each corner of the lamp shade These are to provide for the attachment of the beads When all is done the lamp shade should be pressed carefully from the back.

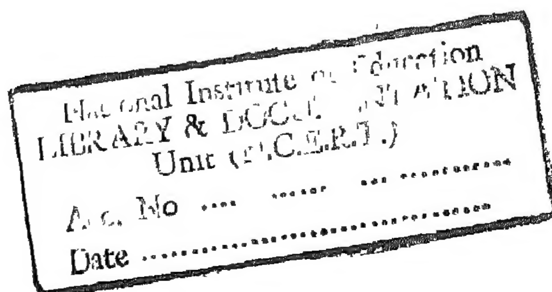
Four short strings of beads (about 2 in. long) are made for weighting the corners. The colours of the beads should be the same as the colours used in the lamp shade Each string of beads has attached to it an ordinary dress hook, for slipping into the eyelets By this means the strings are easily detached when the shade needs washing.

Time: 7 lessons if some decoration is done at home.

[This course of lessons in Decorative Needlework has been written by Eileen D Arundel]







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